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PSYCHOSIS IN ANIMALS.—The *Journal de Zootechnie* contains a review from the pen of Prof. Cadeac, which at the present time calls the attention of comparative pathologists.

Under the name of *Psychosis* are designated temporary or permanent morbid conditions, which are characterized by disturbances of psychical functions. They have very close relations with neurological affections, but their importance in our domestic animals has not the same serious character as it has in human medicine.

A few of those are considered by Prof. Cadeac.

Dementia.—The weakening of all the intellectual faculties (memory, attention, judgment, association of ideas) constitute *dementia*. This name is applied to all states of chronic and incurable intellectual weakening.

In dogs, it frequently follows an attack of subacute meningo-encephalitis, as has been observed by Marchand and Petit, and is manifested by symptoms of progressive general paralysis.

A traumatic dementia has been mentioned in a cat, after a fall in a well. He remained an imbecile for the balance of his life. Pierquin, who observed that case, records also that of a parrot, which lost the use of his voice and speech during a long cannon-firing. This bird was never able to speak afterwards when a gun was fired. The same observer records that the presence of a dog produced in some cats a psychosis of fear, which

is such that they remain immobile, stupefied, as in full extasis, and will not return to their normal condition for several hours after the dog had gone.

Was this true dementia?

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Idiocy.—Under the name of idiocy, imbecility, mental debility, is designated the intellectual weakening due to an arrest in the development of the nervous elements, while dementia is applied to that weakening after the nervous system has been fully developed. Dogs may be born idiots because of a cerebral alteration during fœtal or intra-uterine period. They may become so, when a diffused lesion of the cerebral cortex takes place in the first weeks of their life.

An idiotic dog presents peculiar symptoms: he looks abnormal, peculiar and different from any other dog of his age. Left in a yard, he seems lost, assumes queer positions; his head shakes from right to left, he is greatly afraid when approached noisily; but instead of running away, he rolls himself down, crouching, with his eyes frightened, without barking or defending himself.

He does not know where to look for his food and only takes that which is placed near him. He hears, sees; but these functions give rise to only simple bulbo-medullary reflexes; the reactions are never related to the sensations. The general sensibility is dull or reduced; a prick promotes the moving of a leg without manifestations of pain, without cries or defense. He has a tendency to move in a circle, does not recognize the person that brings him his food; shows no feeling at the approach of another dog, does not know where to find his kennel, he becomes dirty, has no memory, nor judgment, his actions are all automatic and queer.

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Melancholy.—This is characterized by great sadness with intellectual laziness and voluntary inertia. If the intellectual

troubles are difficult to make out in our domestic animals, troubles of affection and those of locomotion can be observed.

The dog that has lost his master is sometimes depressed, sad, unwilling to move, dumb or barking sadly, he refuses all food, and may die after months in marasm without having presented any special symptoms of sickness.

Under the name of melancholic or of circular craziness the raving vertigo of horses has often been designated. For Gleisberg it is, and he considers it as due to organic diseases of the brain. Hoffmann considers it, with immobility, as a psychical disease. Freré says that raving vertigo is analogous to mental confusion in man.

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Phobias.—The general panics mentioned in horses and cattle are less acute psychosis or phobias than reactionary instincts, stimulated by some external influences. They are manifested by breaking and running away, stampedes and are not rare accidents occurring during battles, manœuvreing of troops or during fevers.

The excitation of one or several individuals in delirium is followed by an uncontrolled runaway of most of the animals, which throw themselves blindly against any obstacle. Even sometimes during those conditions bovines exhibit peculiar disturbances in their actions, their voice and their digestive functions.

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Imaginary Gestation.—This has been considered by some as a sign of hysteria. It is a periodical function stimulated by the nervous center. Sluts that have had pups before, but which have not been to the dog at the time of their last being in heat, may fifty days after, present the preliminaries of milk secretion, then towards nine or ten days after, have their vulva swollen, open, with glairy discharge. Then they proceed to the making of the place for them to deliver, they become agitated, nervous,

are under the impression that they will have little ones. A few days after, they have milk, and it is probable that if at that time, new-born puppies were given to them, they would gladly adopt them.

Some mares present eleven and half months, after a fruitless covering, the return of the milk secretion; they sometimes offer the signs of an approaching parturition, three hundred and forty days after meeting a stallion which has not served them. They show all day great uneasiness, lay down often, get up on a jump, call for their colt, whinny loudly when they see people round and soon have enough milk to feed another colt.

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Sexual Perversions.—Those are observed under the form of more or less unresisting impulses in degenerated animals. The most common are onanism and coupling with animals of a different specie.

Onanism designates the whole of the means resorted to by individuals of either sex, to produce artificially the venerian organism, without the conditions of normal coitus. Like man, animals do it to satisfy a similar voluptuous feeling. Stallions that masturbate themselves, sometimes have no excitement near females.

Stallions of the equine species perform this act by striking their abdomen with the penis, by the contractions of the ischio-cavernous muscles. Mares rub themselves against surrounding hard bodies. Donkeys tickle the extremity of the penis with their lips. Dogs and male goats frequently masturbate by rapid contractions of the hind quarters. Female cats rub themselves against convenient objects. Castration is the only means to cure animals of those bad habits.

Unnatural Coupling.—This is not rare to observe. Dog is fond of women. Large Newfoundland and St. Bernard dogs sometimes will throw one down and manifest a strong desire for copulation. Dogs of smaller size attack hens sometimes. Cadiot has recorded the case of one eighteen months old, which used to

play with hens and took the habit of mounting one of them. Villemin has seen a ten months old dog mount a hen, while he held her firmly with her head in his month. After he was castrated, he always tried to continue his habit.

A horse may mount a cow, and even perforate her vagina. A bull may do it with a mare.

True pederasty exists in dogs, as well as in man. Some look for dogs. Albrecht reports the case of a dog that had prostatitis and a peculiar odor of trimethylamine about him and was covered by male dogs. He submitted willingly to the act.

The unnatural coupling, results no doubt, sometimes from a psychosis, or again is due to obstacles existing to the execution of normal sexual connections. If there are human beings who resort to flagellation to excite a state of genital erethism, there are also stallions which, though full of life and strength, do not enter into erection near a mare unless a whip is snapped near them or unless they feel it tickling their legs.

According to Cornevin the whip promotes the sensation, which calls the image and this gives rise to the idea.

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On Alopecia.—The etiology and pathogeny of this pathological manifestation on the skin is rather obscure. Whether it is due to nervous, mechanical troubles, infectious or toxic, is yet an unsettled question.

At one of the meetings of the *Societe Centrale de Paris* an interesting paper was read, to throw, if possible, some light on the subject.

Three cases were recorded. In a first, it was a horse that received in subcutaneous injections, at intervals of various times, bacilli of pest, treated at 56 degrees which at each injection produced an exaggerated local reaction. After the administration of a certain quantity of the ampoules, there appeared wide spots of urticaria, which spread all over the body, except the extremities and which were followed by an abundant epidermic elimination and a complete depilation.

The second case was that of a horse, which since several months past, had been submitted to subcutaneous injections of diphtheric toxine. He also presented small oedematous patches, here and there all over the body, but more developed at the point of inoculation. Over these patches the hairs came off also, carrying with them epidermal sloughs.

The third case was that of a fresh horse, upon which the first vaccination, made with a mixture of diphtheric toxine and antitoxine, did not produce any reaction. But with the pure injection of toxine following, he had on the neck and the shoulder oedematous swellings, which spread all over the body, the hind quarters and not on the extremities. On the surface of those swellings the hairs fell off in thick tufts.

These three animals recovered. It is remarkable that with them the antitoxic power of their serum was superior to the average of sera. The horses belong to the Pasteur Laboratory at Garches and may have been seen by the American veterinarians who visited the laboratory last summer.

In these observations, one was probably in the presence of a manifestation of hypersensibility, which is a modality of anaphylaxy; which is by itself a phenomena in margin of immunity. This hypersensibility is manifested most ordinarily in horses used for the preparation of serum by oedemas localized at the point of inoculation, but sometimes there is a true urticaria, an eruption more or less generalized. Finally a third mode of reaction may be represented by *alopecia*.

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"It is then proper to ask if anesthesia cannot explain the pathogeny of alopecia, by the action of the causes, ordinarily considered; that is to say of the substances as different, as the microbian toxines, intestinal poisons, or again mercury, all of which are considered by some as the pathogenic cause."

"In relation to hydragyric alopecia, it is to this day admitted that there is a mercurial intoxication. But hydragyrism proper presents a series of well-marked symptoms, of which not a word has been said in alopecia. It is besides, difficult to attribute such

a complete falling off of the hairs by the cutaneous absorption of a minimum dose of ointment used as a blistering ointment.

On the contrary, it belongs to the anaphylactic shock of being promoted by a small quantity of substance, unable to produce by itself a toxic action. Again it is known that urticaria is, in human medicine, one of the symptoms of serial or of alimentary anaphylaxy. Finally the power of recovery that organism possesses, even after the administration of the promoting substance, as if the hypersensibility was disappearing to make room for immunity, that power comes to characterize anaphylaxy.

Until lately anaphylaxy, as immunity also, belonged to the domain reserved to colloids only; but recent works have proved that crystalloids enjoy the same properties and that for instance the medicamenthous exanthema was nothing but an anaphylactic phenomena. Why should it not be the same for the hydragyric alopecia?

For the poisons produced by microbes and the toxines from auto-intoxic organisms, the same part can be attributed to them, as that of the toxines injected into horses in the preparation of serum.

These observations made by Prevot and Ramon justify the seducing hypothesis of a single pathogeny for all alopecias and they all deserve the deepest attention of pathologists.

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Veterinary Medicine in Batavia.—I have received from Doctor L. De Blieck what I believe, is a report to the Department of Agriculture. It forms a large volume, whose contents, I regret to say, I am not able to read as I would.

The first part of 167 pages is handsomely illustrated by plates referring to domestic animals, horses, cattle, sheep, camels and swine, and treats of facts relating to their management. Sanitary inspection is also considered, as well as the requirements for the position of inspectors.

Reference is also made of the veterinary colleges, to the preventive inoculation against redwater, pleuro-pneumonia contagiosa, actinomycosis, anthrax, osteoporosis, influenza, etc.

The second part contains governmental acts of 1888 to 1903, relating to the importation of domestic animals, of 1910 providing for the compulsory dipping of sheep, of 1903 relating to swine, of 1905 relating to the production and sale of milk.

The diagnosis of glanders seems to have also been the object of careful inquiry. And the following conclusions of the experiments made in the Dutch Indies with the sero-diagnosis are interesting:

1st—54 p. % of all cases of glanders could be diagnosed on the first test by the agglutination method.

Out of the cases, where the test was repeated, a decision was arrived at in 52 p. %, after the second, and in 2 p. % after the third test.

2d—The agglutination test of the serum of glandered horses showed a value of 1 to 1000 in 61,2 p. % of all cases.

3d—Out of all horses with an agglutination power of 1 to 1000 or over, only 1,09 p. % proved not to be affected with glanders at the post-mortem examination.

4th—Out of the infected horses, which were twice tested and in which the serum on the first test had a value, less than 1 to 1000, a decreased titre was shown by 5,6%.

5th—78,7 p. % of the cases of glanderous affections could be determined on the first test by the complement-fixation method.

In all cases, in which the test was repeated, the second test decided.

6th—In 87,9 p. % of all glandered horses, the serum showed a complete fixation in the quantity of at least 0,2 c.c.

7th—Only 0,69 p. % of the horses, in which the serum gave a complete fixation in the quantity of 0,2 c.c., and less, proved healthy at post mortem.

8th—In 5,7 p. % of all glandered affections the complement fixation of the serum was complete in a quantity not less than 0,2 c.c.

9th—In chronic cases the complement-fixation test gave much better results than the agglutination method.

10th—For the early diagnosis of recent infections the complement fixation proved not so effective as the mallein-and-agglutination test: the last ones alternately gave the first a positive result.

11th—In many cases, the agglutination method is satisfactory for the diagnosis of glanders: in fresh cases, it sometimes gives better results than the complement fixation.

12th—The method of complement fixation generally determines more cases of glanders than the agglutination. Horses in which the serum gives a complete fixation in the quantity of 0,2 c.c. and less, have to be considered as glandered, incomplete fixation in the quantity of 0,2 c.c. does not allow one to declare a horse as glanderous.

13th—The Prussian system (examination by serum test only) is not practical for the Dutch Indies.

14th—The results obtained from January, 1911, till November, 1913, allow one to decide, that in the Indies, glanders in the majority of cases can be detected in the shortest possible time by combining the above-mentioned serum tests with the ophthalmic mallein test.

In cases of re-examination the mallein test is to be omitted and only the serum is to be tested.

The report of Doctor De Blieck was printed in Batavia and I regret that I was not able to do him the justice that I am sure it deserves.

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BIBLIOGRAPHY—*Pathologie Interne des Animaux Domestiques* (Internal Pathology of Domestic Animals) by C. Cadeac, Professor at the veterinary school of Lyon—second edition, entirely revised and considerably enlarged. Published by J. B. Bailliere and Sons of Paris.

I have regularly taken notice of the various volumes of this edition of the great work undertaken some years ago by the learned professor of clinic of Lyon. To-day I have before me the 8th volume of the *Internal Pathology*.

There has been no work in the French veterinary literature, which has ever been required as much, as this part of Cadeac's Encyclopedia which forms a complete treatise of internal pathology. It is the result of over twenty years of collecting of important material which is now presented.

As our domestic animals differ considerably in the anatomical point of view, there are necessarily correlative differences in their pathology. And as each species has its specific diseases, the work of internal pathology meant a pathology for each animal. It is that enormous work that Professor Cadeac has realized with an excellent method.

The work that we have now and its predecessors, is illustrated by numerous figures. It is the last volume of the series and is valuable and interesting as those before it.

Its contents are the completion of the skin diseases partly treated in the volume before this, then those of muscles and finally of the nervous system. This is the principal part. It treats successively every form of disease affecting the meninges, the brain, the spinal cord and those of the nerves, neurosis, etc., etc.

The eight volumes of the encyclopedia are divided as follows: 1st Diseases of the mouth, pharynx and stomach; 2d of the intestines; 3d of the liver, peritoneum, nasal fossae, sinuses and larynx; 4th of the bronchia, lungs and pleurae; 5th of the circulatory system; 6th of the blood, general diseases and those of the genito-urinary apparatus; 7th of the skin and muscles; 8th of the nervous system.

To all foreign veterinarians, who read French, *Internal Pathology* will prove a most valuable work to read and study from.

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CASTRATION AND OVARIOTOMY by Professor F. Hobday, F.R.C.V.S. Second Edition: W. and A. K. Johnston, Limited, London.

If my memory is not at fault it was a little over fifty years ago or even more that a French veterinarian, Professor Gourdon,

published his work on *Castration of Domestic Animals.* The book covered some four or five hundred pages, was well illustrated, treated of the history relating to the operation, gave the anatomy, the *modus operandi* of the various methods then in use, of the effects of the operation, of the *sequelae* and complications, etc., etc. Ovariotomy by the Charlier method was then minutely described. In fact it has considered the whole subject in a most scientific manner. It was no doubt a work called to take its place in the veterinary literature, to become classical and written with the object of taking from the hands of the ordinary gelders, an operation which veterinarians had and have yet rather a tendency to leave with them.

Since the days of Gourdon's work, there has been others on the same subject, less complete probably, but essentially more practical and embracing other operations pertaining to similar objects, and covering the entire family of domestic animals, males and females, with also those that present anomalities.

The work that Prof. Hobday publishes to-day is one of these; and in its 160 pages, contains the most important facts relating to the subject.

It is divided into 10 chapters:

In the first is treated castration of horses, bulls, ram, goat, pig, dog and monkey, cat, rabbit, and guinea pig, wild and semi-domesticated animals.

Scrotal hernia fills the 2d chapter; castration of cryptorchids the 3d and 4th; Caponing of fowls and ostriches is in the 5th; in the 6th the effects of castration. In the 7th ovariotomy and hysterectomy of mares, in the 8th those of cattle, in the 9th those of small animals. Chapter 10 considers anomalies of sexual glands of man and horses.

Professor Hobday's work is nicely illustrated with 80 figures, some of which many readers will find themselves familiar with, and there can be no doubt that it will meet with the success that it deserves.

A. L.

FOOT AND MOUTH DISEASE.

The latest information seems to indicate a steady gain by the Federal and State sanitary forces over the outbreak of foot and mouth disease; so that all traces of it will probably be eradicated before the end of the winter season. Reports up to December 23 gave 78 counties in Iowa entirely released from quarantine, also the entire eastern and western portions of Kentucky, the northern peninsula of Michigan, many of the northern counties of Wisconsin and the lower third of Illinois. And in addition, the Federal government—through the Department of Agriculture—has been able to modify the quarantine on portions of those states referred to, and other infected states. The control of this terribly infectious disease, which is steadily leading up to its final eradication, is being effected by the rigid quarantine that has been placed on the affected states, thereby checking its widespread dissemination; and the organizations—State and Federal—and the individuals engaged in this work, like those in former outbreaks, are deserving of the greatest praise.

The mention of former outbreaks is suggestive of retrospection; and just at the moment we were writing the word, as if by fate, our hand fell upon *Circular No.* 15 on *Aphthous Fever or Foot and Mouth Disease,* by Dr. C. J. Marshall, issued by the State Live Stock Sanitary Board of the Commonwealth of Pennsylvania. The circular itself is recent, having been issued in November, 1914, but in perusing it, we came upon a description of Aphthous Fever, written by the late Leonard Pearson, and printed for distribution in 1908, that Dr. Marshall has incorporated in his circular, and which is so interesting and instructive that we have lifted it bodily from the bulletin and reprinted it here, instead of what we had intended writing on the subject from data at hand.

"APHTHOUS FEVER OR FOOT AND MOUTH DISEASE is an acute infectious and highly contagious disease affecting cloven-footed animals. It occurs most frequently among cattle, sheep, goats and swine. It has also, in some rare instances, occurred in horses

and some observations denote that dogs, cats and even poultry may be affected by it. The large herbivora, as found in zoological gardens—camels, giraffes, deer of all kinds and elephants—are susceptible. The disease is also transmissible to man; such transmission results most frequently in children and from the use of the raw milk of diseased cows. Aphthous fever in man is usually not a dangerous malady but it is recorded that in some outbreaks there have been many deaths.

"The disease is an old one but its most extensive destructive outbreaks have occurred during the past two hundred years. The several invasions of European herds and flocks by foot and mouth disease have come from the East toward the West, have been very extensive, covering great regions, involving several countries, and have sometimes persisted many years. The invasion of England which began at about the beginning of the second third of the past century continued nearly fifty years. The German invasion which began in 1888 continued seventeen years. In 1897-1899 more than 1,000,000 animals were attacked in Holland. There was a small outbreak of foot and mouth disease in Western Massachusetts and in Eastern New York in 1870, and an outbreak in New England, centered around Boston, in 1902-3. The latter outbreak involved 244 herds in four states and necessitated the destruction of 4,712 animals.

"The rate of mortality from foot and mouth disease is low but the destruction of values and the losses resulting from it are high. It was estimated in 1875 by Fleming, the great English authority, that the losses to the farmers of England from foot and mouth disease then amounted, upon a very conservative basis of appraisal, to 13,000,000 pounds sterling ($65,000,000). The loss upon each herd attacked by this disease amounts to from 20 per cent. to 50 per cent. of its value. The consideration of this fact in connection with the knowledge that foot and mouth disease spreads with such remarkable facility that, if uncontrolled by public measures, it may attack from 25 to 75 per cent. of the herds of a district will give an idea as to the potentialities for harm that accompany outbreaks of this disease and will ex-

plain why farmers in countries that have passed through visitations of this plague dread it more than any other scourge of cattle.

"In 1871, about 700,000 cattle were attacked by foot and mouth disease in England. The average loss on each bovine animal attacked was £3, making the total loss about $10,000,000. An outbreak of about the same dimensions occurred the same year in France; this outbreak was repressed but a reinfection began in 1893 and continued to increase and spread until 1900, after which it was fought back until 1906 when there was again a considerable increase. During twelve years, up to 1905, 16,000,000 animals were attacked by foot and mouth disease in Germany. The losses to German farmers from this cause amounted to well about $100,000,000 and the cost to the government of measures applied to control the disease was about $30,000,000. During the past few years, most of the countries of continental Europe, excepting Scandinavia, have had to keep up a constant, difficult and expensive warfare against foot and mouth disease.

"In a district or a country where foot and mouth disease exists there prevails, and must continue, until the disease is eradicated, a state of unrest and uncertainty with relation to all operations affecting live stock. No one can foresee when his herd will be attacked, every animal brought to premises where the disease has existed is liable to develop the disease; any purchase, not only of animals of susceptible species, but of hay, straw, manure or even grain, if in bags that may have been on infected premises, may introduce the contagion. The combined unrest, annoyance and loss that result under such circumstances destroy all security and profit and lead to a great restriction in cattle trade and cattle keeping. Instances are numerous, in other countries, in which owners of pure bred herds have discontinued breeding, and have sold their cattle, as a result of loss and discouragement from this disease.

"So long as foot and mouth disease prevails in this country, the permanence of our export trade in live cattle and sheep is in jeopardy. Experience shows that English restrictions on such

shipments will be continued until the last trace of disease has been eradicated. These restrictions result from the fear of English farmers that their country may become reinfected and that the memorable and terrible losses they have suffered from the ravages of this disease may be repeated. Great Britain has been free from foot and mouth disease since 1901.

"THE CAUSE OF APHTHOUS FEVER has not yet been isolated but the properties of the virus of the disease have been studied. It is known that this virus may retain its vitality and virulence in a stable or a manure pile for as long as six months, that it will withstand freezing, and that it may be destroyed by disinfectants. Dark, damp places are most suitable for the prolongation of its life. The virus appears, also, to live upon or in the bodies of recovered animals for several months, so that such animals are a source of danger if they are permitted to come into direct or even indirect contact with susceptible animals. Fleming reports a case wherein the virus of aphthous fever retained its virulence for four months in a feeding trough exposed all of this time to the weather. He cites another instance wherein the virus persisted five months in a hay rack that had been used by diseased cattle, and the infection was carried in this hay rack to cattle on another farm to which it was taken.

"THE VIRUS OF APHTHOUS FEVER SPREADS more easily than that of any other known disease of cattle; it is carried most readily and most surely by affected animals, or by animals that have come from infected herds or premises. It may also be carried, and in numerous authenticated instances has been shown to have been carried in hay, straw, grain, manure, stable utensils, blankets, bags, etc., from premises where diseased animals have been. It is also carried upon the hands, boots or clothing of persons who have been on infected premises. Small animals may transport the contagion just in the way it is carried by inanimate objects, so that it is necessary to guard against the spread of infection by dogs, cats, poultry and pigeons. There are numerous examples of the carriage of infection long distances wherein all means of communication excepting by birds have been excluded.

Bolz reported in 1904 a case wherein the virus persisted in a manure pile for six months and caused a new outbreak when cows came in contact with the scattered manure. In the past outbreak in Pennsylvania some cows became infected while walking across a railroad unloading platform over which some exposed cattle that later developed foot-and-mouth disease had passed some hours before; these cows were later placed among other cattle and infected those herds.

"Calf buyers and cattle dealers who go from farm to farm and from herd to herd have often carried infection, presumably upon their boots or clothing. Such persons may unknowingly come in contact with the disease in its earlier stages or in its later stages and may fail to recognize that the animal is sick and that they are exposed and then may carry the seeds of disease to other premises. During outbreaks of foot-and-mouth disease, visits of perambulating cattle dealers, of castrators and of careless cow doctors are particularly dangerous. There is, however, no danger from the visits of veterinarians who observe certain precautions.

"The State Livestock Sanitary Board has issued the following instructions to its agents who are engaged in work on the control of foot-and-mouth disease:

"'1. If there is any reason to suspect that any animals are affected with foot-and-mouth disease in a herd that is to be inspected, the veterinarian should wear special clothing provided for this purpose. If, by chance, a veterinarian should come in contact with an animal affected with foot-and-mouth disease when he is not clad as described below, he must at once disinfect his hands, boots and clothing as well as possible and remain away from the vicinity of healthy cattle, sheep, goats or swine until after all of his clothing has been disinfected by fumigation.

"'2. Special clothing for use in the examination of animals affected with foot-and-mouth disease consists of a coat with a smooth rubber surface and so long as to come within ten inches of the ground; rubber boots with extension tops to extend up

the thighs; rubber gloves and a rubber hat or a cotton cap, which, after use, may be soaked in an antiseptic solution.

"'3. In using the special clothing mentioned in paragraph 2, the tops of the boots should be drawn up, the coat should be tightly buttoned and the sleeves should be closed at the bottom over the wrist of the rubber gloves before the veterinarian enters the premises where the infected animals may be. Before entering the premises, it is invariably necessary to provide and have ready for use a solution of bichloride of mercury, one part to five hundred. After entering the infected premises, the rubber coat must not be unbuttoned (nothing can be taken from the pocket) until after the clothing is disinfected as provided in the paragraph following.

"'4. When the veterinarian leaves the building or pen occupied by the affected animal or animals he should first disinfect his rubber gloves and the entire surface of the coat by washing with a sponge and the antiseptic solution. He will have to have help to wash off the back, shoulders and sides of the coat. Special attention should be given to the removal of infectious material that may have lodged on the front of the coat or the sleeves. After the coat has been cleaned, it may be removed, then the boots should be washed from the top down to and including the soles and heels, after which the hat should be washed or soaked in the antiseptic solution. Lastly, the rubber gloves should be removed and the clothing put away in a suitable case or bag. The whole kit is to be fumigated with formaldehyde at the close of the day's work.'

"Cattle hides, calf and sheep skins, wool, milk and the carcasses of slaughtered diseased or exposed animals may convey contagion. Infested stock yards and stock cars and the manure they contain are sources of disease.

"The Virus May Be Taken Up by exposed animals through the digestive or respiratory tract, or infection may result from inoculation upon the skin or into the blood stream.

"The Period of Incubation, or the interval between exposure and the occurrence of the first symptoms, is usually from

two to five days. This time may, in exceptional cases be as short as twenty-four hours and it may be as long as twelve days.

"THE SYMPTOMS develop in a rather regular manner and so it is possible to divide the disease into stages.

"THE FIRST STAGE begins with more or less dullness and inappetenance and is accompanied by fever. The temperature may not be more than 103 F., or it may be as high as 105 degrees to 107 degrees F. This stage is characterized, at first, by dryness and warmth of the muzzle, by a dry, hot mouth, evidence of discomfort of the mouth as shown by slow, careful chewing, by some awkwardness in grasping food, and by grinding the teeth. If an effort is made to examine the mouth it is held tightly closed. Very soon the mouth becomes unduly moist from the increased secretion of both mucous and saliva. As the tenderness and pain increase, the animal works the tongue and cheeks and makes a sucking, clicking or smacking sound. There is considerable accumulation of saliva in the mouth, some collection of froth about the lips and strings of sticky saliva may descend from the mouth. This condition is more striking at a somewhat later period of the disease. It soon becomes apparent that it is painful for the animal to take up food with the tongue and lips and if hard, solid food is taken, as half of an ear of corn, the head is held high and to one or the other side, so that the corn will gravitate to a less sore place in the back of the mouth, where it may be crushed and then swallowed. Not infrequently such a mouthful will be dropped after the pain it causes is experienced. Sometimes during this stage, or perhaps, not until a day or two later there is evidence of soreness of the feet, as shown by a tendency to shift the weight from one foot to another, by a quick tripping or jerking motion or by an inclination to lie down more than is usual. The first stage lasts one, two or three days.

"THE SECOND STAGE, or that of eruption, is characterized by the occurrence of vesicles, appearing as water blisters, in and about the mouth, about the feet and upon the teats and udder. For the mouth eruptions, the favorite seats are the following: The ends and margin of the pad; the tip, borders and top of the

tongue; the front and face of the pad; the inside of the upper lip; the inside of the lower lip; the borders of the lips; the muzzle; the lower surface and the fraenum of the tongue; the gum and the lower jaw; the inside of the cheeks, and the roof of the mouth. Vesicles may appear about the nostrils.

"Vesicles or blisters appear upon the feet between the hoofs, especially at the front of the cleft; about the coronary band, about the base of the supernumerary hoofs and upon the heels. The vesicles upon the teats are more frequently seen about the orifice and may almost cover the teats, and sometimes occur on the skin of the udder. This condition causes much pain. The opening of the teat may be closed by inflammation and swelling resulting from the eruption. Vesicles appear first as small elevations of the superficial layers of the mucous membrane or skin, from ⅛ to ½ inch in diameter. They are of grayish color. Vesicles may not become larger or they may increase in size to an inch or more in diameter, or several may become confluent and loosen and raise up an area several inches in diameter. Such extremely large blisters occur upon the tongue and muzzle. The vesicles contain at first a clear, straw colored serum which later becomes cloudy. The membrane covering them is thin and it soon breaks. When the vesicles break, the loosened epithelial or epidermal layer remains for a time attached at the borders, forming a pocket, and, as it tears more, the loose shreds of membrane hang about the borders of the denuded area until these become detached and fall away.

"Vesicles usually appear first in the mouth and almost simultaneously, or a few hours or a day later, on the feet and udder. Sometimes the vesiculation is observed in but one location. In cattle, it is the mouth that it is most likely to show lesions, while among sheep and hogs the lesions may be confined to the region of the feet. Vesicles may be few and small or they may be large or numerous. The resulting discomfort and constitutional disturbances are usually in proportion to the extent of the primary eruption. The affected areas are exceedingly sensitive and painful.

"As the vesicles form, the fever abates and when the vesicles rupture, the temperature falls nearly or quite to normal. The subsequent course of the disease is free from fever, unless there is very extensive local inflammation. Vesicles rupture very soon after they form, especially in the mouth, where the membrane covering them is softened by moisture and sustains violence from the constant motion of the tongue, cheeks and lips. About the feet and upon the teats, the vesicles last longer. The second stage lasts one to three days.

"THE THIRD STAGE, or that of erosion, is characterized by the appearance of raw, denuded surfaces that result from the peeling off of the outer layers of the mucous membrane or skin that have been undermined, loosened and raised up by the fluid within the vesicles. The raw surfaces thus exposed are a bright, rosy red or even scarlet color. They are bounded by a clear cut, abrupt margin and are slightly depressed below the level of the surrounding surface. The surface of the sore is at first smooth; afterwards it is covered by granulations and later by fluid pus or by a more or less tenacious dirty-yellow colored exudate. The surface of the erosion, if upon the cheeks or tongue, may show red, naked papillae denuded of their epithelial covering.

"The soreness of the mouth is in some cases sufficient to prevent the animal eating or drinking for several days, perhaps for a week. Under these circumstances, milk flow ceases and emaciation is rapid. If excessively sore feet add to the discomfort, constitutional effects are more marked. Pregnant animals may abort. In many instances, the udder becomes inflamed, especially in fresh cows, and may be permanently damaged or ruined. There is often irritation and discharge from the eyes and nose. Many animals cough, revealing irritation of the bronchial mucous membrane or of the throat.

"The disagreeable sensation and the pain of the mouth may cause the animal to work the tongue and jaws and to suck and click the cheeks and tongue in such a way as to make a peculiar (but not wholly characteristic) smacking sound. There is frothing about the lips and drooling of saliva.

"The effect of this disease upon milk secretion is shown by the following record of the yield of a herd of thirty-two milking cows (some nearly dry) in Montour county, Pennsylvania. An infected bull was brought to this farm October 27, 1908; the first symptoms among the cows was observed in one animal November 3d, after which the disease developed rapidly in the herd until all were affected.

" Date.	Pounds of Milk.
October 31st	465
November 1st	468
" 2d	437
" 3d	440
" 4th	430
" 5th	378
" 6th	240
" 7th	168
" 8th	156
" 9th	85
" 10th	62

"The third stage lasts from five to ten days, or about a week.

"THE FOURTH STAGE is the period of healing. Preliminary to healing, there may be some corrosion and sloughing, during which erosions develop into deep and extensive ulcers. In most cases, however, healing begins rather promptly and continues rapidly. The erosion gradually closes in from the border and becomes smaller and smaller until it disappears. When healing is taking place the periphery of the sore area is of a gray or yellowish-gray color, and one frequently finds a yellow and rather tough deposit upon the unhealed surface. When this is removed, the base of the sore is found to be of red color.

"THE AFTER EFFECTS OF FOOT AND MOUTH DISEASE are sometimes very marked and of long duration. Dr. Salmon has reported that during the outbreak of 1902-1903 in New England a few herds that had passed through the disease were left. In

about one-third of these cases the owners afterwards asked to have their cattle destroyed, as the cattle were unprofitable or relapses had occurred. Herds that have passed through foot and mouth disease are frequently left in an unthrifty, debilitated condition. This is especially true of dairy herds. Young cattle, dry cows and steers are less severely affected.

"There is a malignant form of foot and mouth disease in which the mortality is high. Outbreaks of this type of disease, in which from ten to fifty per cent. of the attacked animals died, have been reported from several foreign countries. Complications following foot and mouth disease are numerous; they consist of abscess formations about the feet, sloughing of the hoofs, abscesses of the udder, garget, gastro-intestinal catarrh and blood poisoning.

"When infected herds are not destroyed but are kept, the premises remain infected for a considerable time and it is impossible to disinfect the premises as long as the live animals remain as these animals may continue to distribute the seeds of the disease and may reinfect the clean premises a long time after the symptoms of foot and mouth disease have disappeared. An attack of foot and mouth disease does not necessarily confer lasting immunity. The increased resistance to infection that follows an attack may continue for one to two years or longer, but it may not endure more than six months, and instances have been recorded wherein animals have passed through two, three, four and even five attacks of foot and mouth disease. Some animals have contracted the disease a second time within two months.

"THE DIAGNOSIS of foot and mouth disease is not a difficult matter where the disease is discovered in its earlier stages in a herd of animals. When one animal is affected or where the disease has reached a late stage of development there is often difficulty in distinguishing foot and mouth disease from some other condition. There is also difficulty with relation to shipped and market animals brought together in large numbers.

"The conditions that are most likely to give rise to error are those due to accidental injuries to the mucous membrane of

the mouth and a form of inflammation of the mouth caused by fungi, known as mykotic stomatitis.

" Wounds, or external injuries of the mouth, are sometimes seen as ulcers upon the edge of the pad opposite the lower incisors. These may be of the shape of the edge of the incisors and manifestly are toothcuts. Such toothcuts may become infected, causing a small ulcer of irregular shape, and sometimes from such a wound there is a cross infection to the inside of the upper lip. Injuries to the tongue, gums or roof of the mouth may be caused by hard, rough objects taken in with the food. Such injuries usually appear as cuts, tears or scratches and not as flat erosions.

" From close grazing, especially on a stubble field, cattle may wound the muzzle and lips, or the lining mucous membrane of the lips. Such wounds show as scratches or punctures, or as rough, abraded surfaces; they do not have the appearance of erosions and do not have the bright, red color that is characteristic of the lesions of foot and mouth disease.

" There is another form of injury that requires special mention. Cattle shipped by rail and that have been in the cars for a long time, with little or insufficient food and water, have a tendency to lick and to gnaw the wood work of the car. From this they may sustain injury to the inside of the upper lip and the mucous membrane covering the front of the upper jaw. Sometimes the tongue is rubbed. These injuries appear as defects of the mucous membrane of irregular shape and size, brownish color and rough surface. They may be overlaid with brown, thin crusts. In examining such a lesion, it is well to wash it off with water, whereupon it will be found that the surface is stained and discolored and that it is of rough, warty appearance and looks ' dead,' in contrast with the bright red and ' blooming ' lesion of foot and mouth disease. In such cases the mucous membrane of the mouth is likely to be pale and there is little if any salivation, in contra-distinction to the injection of the mucous membrane and excessive moisture in foot and mouth disease. It is to be remembered that in foot and mouth disease the epithelium is lifted up, leaving a smooth surface below, whereas in these

traumatic defects there is a mechanical tearing or a dry mortification, leaving a rough, irregular surface. This form of traumatic stomatitis is not accompanied by any evidence of foot and mouth disease upon the feet or udder. One may find, however, in cattle that have been shipped a long distance a certain amount of stiffness and lameness, and if they have been standing long in foul cars or stockyards there may be some irritation between the hoofs.

" In mykotic stomatitis, there is no preliminary vesicle formation; a distinct layer, as a false membrane, develops upon the surface of the mucous membrane, and the disease is not contagious, although a large proportion of the animals in a herd may be similarly affected, having been exposed to the same conditions.

" One must also distinguish between foot-and-mouth disease and ergotism, foot-rot and foul-claw, and between foot-and-mouth disease and cowpox.

" The animal that has passed through an attack of foot and mouth disease may be recognized by the presence of unhealed ulcers. These, in their last form, may appear only as small red depressions or as yellow spots. Very slightly depressed areas covered by clean mucous membrane, may be seen upon the dorsum of the tongue. Such spots following erosions of aphthous fever have sharply defined borders and the papillae covering them are more slender, shorter and whiter than upon the surrounding membrane. The spots may be circular and small, or they may be of irregular shape and cover half of the dorsum of the tongue. The healing of an ulcer at the tip of the tongue—a frequent seat—may leave a little puckering of the membrane. Yellowish scars or puckering of mucous membrane about the margin of the pad and within the upper lip may remain from the healing of ulcers of aphthous fever.

" The soreness of the feet and slightly excessive moisture between the digits may remain after the mouth lesions have healed. Sometimes, after extensive eruptions about the feet, the hoof horn develops a ridge similar to that seen on the hoof of a horse that has suffered with laminitis. There may be a partial separa-

tion of the horn from the coronary band, especially at the heels.

"It is necessary to hold suspected animals in quarantine until doubt can be removed. In some cases information useful in deciding as to vague and indefinite conditions may be obtained by exposing or inoculating a susceptible animal. In Pennsylvania such inoculations are by law prohibited excepting when made by authority of the State Livestock Sanitary Board.

"THE PREVENTION OF FOOT-AND-MOUTH DISEASE is a difficult matter on account of the virulence of the disease, the ease with which the contagion may be transported and the vitality of the virus in the bodies of apparently recovered animals and in places that have been contaminated by diseased animals.

"In former times, attempts to control the disease were regarded as hopeless and when aphthous fever appeared in a locality it was the custom of cattle owners to inoculate their animals and put them through the disease as quickly as possible. They simply accepted as inevitable the loss of a large part of the value of the herds and flocks in infected regions.

"The methods of prevention that have been practised have consisted: First, in general restrictions on trade in animals of susceptible species and their products and the products of farms in infested districts, and the quarantine of infected herds and premises until danger shall have disappeared; or, second, in the method now being practised in Pennsylvania, consisting in the destruction of infected herds and the complete eradication, with the greatest attainable promptness, of all known centers of infection.

"The method of control by quarantine has been practiced successfuly in a number of instances. On the other hand, attempts to control foot-and-mouth disease by this method have often failed. It is exceedingly difficult to quarantine effectually against aphthous fever, and *to attempt to do so is to take great and unwarranted risks.* It is necessary that such a quarantine shall be exceedingly rigid, that it shall be faithfully observed to the minutest particular, and that it shall be of long duration. Otherwise, it is not effective, or sufficient to prevent the spread of

disease. As long as premises are under quarantine on account of foot-and-mouth disease there can be no feeling of security in the neighborhood, or even in distant places, on account of the remarkable facility with which this disease spreads. For these reasons, and as a result of considerable successful experience in the use of the "stamping-out" methods for the control of foot-and-mouth disease, there has developed, in recent years, a strong sentiment in favor of the application of the second method when the distribution of the disease is such as to denote that it may be successfully controlled and eradicated by this means. The "stamping-out" method was applied with complete success and at small cost, in proportion to the value of the work, in New England in 1902-3.

"If foot-and-mouth disease has been permitted to become very prevalent in a community, then it is not possible to eradicate it by the stamping out method, and the very long, troublesome and, in many respects, painful and oppressive method of controlling the disease by quarantine must be practised. This means that the work would drag on and quarantine restrictions would have to be continued for years. The successful application of the stamping out method, even at very large cost, is by far to be preferred.

"If the diseased herds are promptly slaughtered and the contaminated premises disinfected, quarantine regulations may be of relatively short duration. On the other hand, if the infected herds are held under quarantine for recovery, the premises they occupy are dangerous and may be a source from which the disease may spread for as long as six months, or perhaps longer, after the recovery of the diseased animals.

"THE CHARACTER OF QUARANTINE that is necessary for the control of foot-and-mouth disease is indicated by the following order of quarantine adopted by the Pennsylvania State Livestock Sanitary Board:

"'Upon the discovery of foot-and-mouth disease, it is required that a quarantine shall at once be established of the affected animals and of all cattle, sheep, goats and swine that it is believed

may have been exposed. Premises or objects occupied or contaminated by affected animals or their products must be quarantined and premises may be quarantined where there is reason to believe that there may be danger of contamination by foot-and-mouth disease.

"'1. Cattle, sheep, goats and swine under quarantine on account of foot-and-mouth disease must be kept absolutely and wholly separate and apart from all other animals, and all other animals must be kept wholly apart from quarantined animals.

"'2. The quarantine is extended to animals other than those originally quarantined, if they are permitted to come in contact with quarantined animals or to enter quarantined premises.

"'3. Persons caring for animals quarantined on account of foot-and-mouth disease must not, under any circumstances, come in contact, either direct or indirect, with other cattle, sheep, goats or swine.

"'4. No animals shall be allowed to run loose or to go free on or near quarantined premises. This regulation covers domesticated animals of all kinds, including dogs, cats and poultry.

"'5. If there are pigeons on a farm on premises quarantined on account of foot-and-mouth disease the pigeons shall be killed, or they shall be confined on the said quarantined premises until released by authority of an agent of the State Livestock Sanitary Board.

"'6. If domesticated animals, dogs, cats, poultry or pigeons are kept at liberty or are allowed to go free so near quarantined animals or premises that they constitute, in the estimation of an agent of the Livestock Sanitary Board, a menace to the efficiency of the quarantine, such animals may be confined and placed under quarantine.

"'7. Milk from diseased or exposed cows or milk produced in or on quarantined premises shall be placed in milk cans, or other receptacles that have covers that fit tightly. Formaldehyde shall be added to such milk in the proportion of one pint of formaldehyde (37 to 40 per cent.) to thirty quarts of milk. The covers shall then be placed on the cans or receptacle and the milk

and formaldehyde mixture shall remain in the cow stable, undisturbed, for not less than eight hours, after which it is to be poured into a pit dug in the manure pile and covered over with manure. Agents of the State Livestock Sanitary Board may authorize other safe methods for disposing of such milk.' "

" [Section 33, P. L. 928. 57. *Skimmed Milk, Etc., for Animals, to be Pasteurized.* Every owner, operator, or manager of a creamery, cheese factory receiving station, or skimming station, shall before returning to or delivering to any person or persons any skimmed milk or separator slop, to be used for food or feeding purposes for calves or swine, cause such skimmed milk to be thoroughly pasteurized by heating it to at least one hundred and seventy-eight degrees Fahrenheit. 1913, July 22; P. L. 928; Sec. 33.

" The present outbreak of foot and mouth disease was spread extensively in Michigan and Indiana by unpasteurized milk from a creamery. Two similar outbreaks have occurred in Pennsylvania. It is extremely important that this section of the law should be carefully enforced and it is strongly urged that creameries or skimming stations should be equipped with means for properly pasteurizing all by-products before they are allowed to be delivered for food for calves or swine.

"A circular was recently sent out by our Board giving instruction in reference to installing an economical but satisfactory system for pasteurizing milk for this purpose.

" ' 8. There shall not be removed from quarantined premises, without specific permission in writing from an authorized representative of the State Live Stock Sanitary Board, any material, article or thing that is likely to or that may convey contagion, and, in particular, there shall not be removed from such premises any milk or milk products; diseased, exposed or quarantined animals; hay, straw, fodder, grain or other feed; manure, stable or milk utensils.

" ' 9. Horses that are to be used must be kept in a stable separate from the buildings and premises under quarantine. Before removal to such stable the horses shall be thoroughly cleaned,

their feet and legs shall be disinfected and the halters and harness shall be disinfected.

"'10. Persons caring for quarantined animals must not convey or permit the conveyance, from the quarantined premises, of articles, materials or things that have been in contact with, that are contaminated by or that may have been contaminated by diseased animals.

"'11. All unauthorized persons are forbidden to enter quarantined premises or to come in contact with diseased or exposed animals, or with any object or thing that may have been contaminated by or from such animals.'

"This quarantine is continued until the affected and exposed animals are killed and the premises disinfected.

"In addition to quarantine regulations applying to affected farms, it is necessary to control the shipment of the cattle in and from districts in which foot and mouth disease exists, has recently occurred, or is suspected."

THE AMERICAN HORSE SHOW.

The American Horse Show, which opened in Madison Square Garden, New York City, on Monday, December 7, in a deluge of rain, proved a great success during the week. The Garden never looked better, although the decorations carried out the red cross effect. The programmes, even, were sold by girls in the red cross nurse costume. Flower girls were also similarly costumed. Why not—it was a red cross show, the proceeds of which were for the relief of the unfortunates abroad. But the garden and the programme girls were not the real features, after all. The classes were superfine, and the competition of a high order indeed. The harness classes, the hunters, ladies saddlers and pony classes, in fact *all* classes, kept the judges on their job picking the winners. And above all, the spirit that prompted the show, the alleviation of suffering humanity was never lost sight of, no matter how keen the competition. And finally when every competitive effort had been put forth, the purses that were

won, were mostly thrown into the relief fund; showing that the competition was of the proper kind. We have not learned the amount realized, but trust it was a goodly sum.

THE DECEMBER ISSUE LATE: The reason for the delay in mailing the December, 1914, issue, was made evident on its receipt, in the matter contained in the added editorial page at the back of the book, relative to the postponement of the New Orleans meeting; but we wish to apologize to many hundreds of our subscribers for not answering their interested inquiries in regard to it. We did answer a few that came in the first week, but when it had not reached its readers by the beginning of the second week in December, they began to pour in, in such numbers, that answering them individually became a physical impossibility. We wish, in addition to apologizing, to say to our inquirers that their letters expressing how anxiously they looked forward to the receipt of their numbers each month, and how much they missed them when they did not appear at the accustomed time, were very gratifying and encouraging. We also would add, that if any of them have not *finally* received their December numbers, and will kindly drop us a second line, we will see that they are immediately supplied. The January number will reach you a little late, but after that we will get back to our regular mailing date.

VETERINARY CONFERENCE AT ITHACA, N. Y.: The annual conference of veterinarians, at the New York State Veterinary College at Cornell University, Ithaca, will take place this year on January 14 and 15, and Director Moore anticipates not only the *usual* success, but even greater achievements this year than heretofore. The programme was not ready at this writing, but will be out the first week in January. We are able to state, however, Prof. James Law will give a lecture on *Foot and Mouth Disease.*

KANSAS CITY VETERINARY COLLEGE QUARTERLY for December, 1914, received and, as usual, is full of nuggets.

ORIGINAL ARTICLES.

COLIC.*

By Robert W. Ellis, New York, N. Y.

The word colic, is derived from the Latin *Colicus* or the Greek, *Kolikas,* signifying the colon; and strictly employed, means a painful, spasmodic affection of the intestines, especially of the colon. (Reeks). Medical dictionaries define it as *acute abdominal pain.*

But veterinary practitioners have learned to recognize and appreciate a group of symptoms in the horse, the presence of which they term colic. Said symptoms indicating the presence of pain, or distention, or both, of some part of the digestive apparatus—be it stomach, small or large intestines. These symptoms are due to many indirect and one direct cause, and must be combatted according to the cause in each case. The direct cause is arrested or imperfect digestion, and the indirect cause, is anything that has been responsible for the arrested or disturbed digestive process. The point at which the arrest or disturbance takes place, characterizes the form of colic the horse is suffering from. That digestive derangement is especially easily brought about in the horse, is readily recognized by all veterinarians, due to the peculiar arrangement of the digestive organs, and the fact that the horse subsists entirely on an uncooked vegetable diet, causing fermentation to immediately follow an arrest in the digestive process; so that no time need be devoted to a consideration of that phase of the subject. Let us rather make a clinical survey of the subject, passing rapidly from one patient to another affected in the different manners that they present themselves to us in our daily practice. Our first case is one in which the trouble has begun at the first resting place of the food after it

*A paper presented to the New York State Veterinary Medical Society, at Rochester, August, 1914.

has been swallowed. We come into the presence of a horse that is sleepy, dull, and stupid; and although the abdomen is more or less distended, the horse is not in pain. Some will persistently stand with the head resting upon the manger, oblivious to their surroundings; perhaps snoring from the partial closure of the nostrils by pressure against the manger. Others will prefer to lie; but are perfectly quiet, sleeping, and evincing no pain. While still others show symptoms of vertigo or staggers. Inquiry elicits the information that the horse is a "hogish" feeder, that he has gotten loose in the night and torn open a bag of oats and nearly cleaned up its contents. Or being left in the stable for the day has gotten loose and cleaned all the oats out of the mangers that the other horses in the stable have left. In short he has gorged himself. And in the absence of retching, eructation of gas, or pain, you make a diagnosis of engorged stomach.

In this case, digestion has not strictly speaking been arrested, because it has not been begun, it has simply been deferred owing to mechanical reasons. The walls of the stomach are overdistended, and its physiological function temporarily suspended. The prognosis in these cases, from my observations is usually favorable.

Treatment. Appreciating the fact that fermentation of that mass would mean serious trouble, our aim is to prevent that complication and bring about the removal of the material as soon as possible. In storing away new hay in the hay mow, salt is employed to arrest fermentation until the excessive moisture and heat of the new-mown hay has been evaporated. It is a preservative against fermentation. In the same way we employ it in the case of an engorged stomach in the horse. We desire to conserve the favorable conditions we have found (*i. e.*, absence of fermentation), while bringing about removal of the mass. We therefore begin treatment by the administration of salt. A half pound may be given in solution; and remembering that we already have over distention we use as little bulk as possible in the drench. This salt drench also plays another rôle in the horse's stomach that it has not an opportunity to display in the

hay mow; it has an excito-secretory action. Where the engorgement seems to be excessive, it is sometimes advisable to give the drench (which is probably a quart) in small repeated doses. Say two ounces at one-half hour intervals, administered with a syringe until the whole amount is given. In addition to the sodium chloride, tincture of nux vomica in one dram doses every hour should be given, and just as soon as room seems to permit, the administration of raw linseed oil is indicated. The patient should be aroused from his lethargy and kept moving about to aid circulation and assist in re-establishing the peristaltic function. Copious enemas of warm water are also valuable aids in that respect. Our second case is more alarming. A horse that has recently eaten his evening meal is seized with violent colicky pains, which have responded momentarily to a dose of colic mixture given by the owner, but come on again, seemingly less severe but persistent, and gradually getting worse, until at the time of our arrival he presents a very alarming picture: bathed in perspiration and his countenance depicting intense agony.

It is with great difficulty that he is kept upon his feet sufficiently long to administer a dose of medicine. Others will present all the agony of countenance, but persistently stand, apparently awaiting the end. The respirations are catchy, painful and gasping, the pulse weak and rapid. There is an involuntary regurgitation in the œsophagus, but no gas is emitted per orum. The animal may lie down with care, then raises himself on his fore feet and sits up like a dog, and we realize that we are in the presence of a case of *Gastric Tympany,* and that our patient is in a serious and dangerous condition, calling for immediate relief if his life is to be saved. What are the immediate demands? Obviously the removal of the gas from the stomach, and the prevention of the formation of more. As there is almost always present tympany of the abdomen to a greater or less degree, the use of the trocar in the flank is frequently resorted to with the removal of a certain amount of gas, but without the result of giving relief to the patient. So that those who are proficient with the use of the stomach tube, resort to its use in

this class of cases for the direct removal by mechanical means, of the gas from the stomach, and by means of the same instrument, the introduction into the stomach of materials for the prevention of further gas formation. Others administer, chloral, carbonate of ammonia, bicarbonate of soda, charcoal, etc., in capsule per orum and eserine or arecoline hypodermically. These materials tend to prevent the formation of gases and the eserine or arecoline (I prefer the latter), tend to remove the gas from the stomach, and pass it along into the large intestines, where there is more room for it and where it will be much less harmful. That this takes place is evidenced by the fact that frequently an hour after that line of treatment we are able to get gas at the flank with the trocar that we could not get at the beginning. I have used to great advantage a material of which I regret to say I do not know the chemical composition; it is known commercially as *Nitrox*. I give one or two capsules of it dry, at the same time that I give the chloral. All these capsules are given before the arecoline is administered to avoid the difficulty in administering resulting from the salivation after the use of the arecoline.

If the case does not respond to this first treatment, a little later capsules filled with spirits of turpentine, oil of pepperment, fluid extract of cascara, etc., are administered with gratifying results. A guarded prognosis must be given until the alarming symptoms have subsided. Our next patient presents symptoms quite commonly met with, and while sufficiently alarming at times, and frequently fatal, still, on the whole presents a more hopeful outlook than the preceding one, because mechanical relief is more easily accomplished. Here we find the horse with abdomen distended, the skin stretched to drum-like tenseness, and the animal in variable degrees of distress from that approaching asphyxiation, to moderately labored breathing. We have before us a case of *Intestinal Tympany*. The diagnosis in this case is so simple that we will not dwell upon it. The treatment also is simple; and yet, if muddled or started wrong we are liable to lose our patient. If the conditions are such as depicted,

the immediate use of the trocar, before any form of medication, is proper and imperative. Many cases really require nothing else; but it is well in any case to use anti-ferments, and, where indicated, stimulants, etc. Milder cases respond to the use of rapid evacuants without the use of the trocar, followed by the anti-ferments and stimulant treatment. Our next patient does not cause the owner much anxiety, but to the trained veterinarian it forbodes trouble. The horse has had a diarrhoea, which has ceased without treatment, but he continues to be uneasy—manifests dull persistant pains; the mouth is dry and sticky, and the breath offensive. Lies down and remains quiet for a considerable length of time; but as the condition increases, he lies down and gets up more frequently, refuses to drink water offered to him, and shows a more or less tucked-up appearance at the flank. Examination per rectum probably finds it empty, or containing some soft material, or an odd-formed ball or two of fecal matter. These symptoms, we were early taught to interpret as *Impaction* or *Obstruction of the Small Intestines,* and treatment directed to overcome that condition is usually rewarded with good results, although considerable patience on the part of the veterinarian and the owner is required, as relief is brought about by a slow process. The indications for treatment are the relief of pain, the softening of the obstruction and the re-establishment of peristalsis in the intestine involved.

The administration per orum of a quart of raw linseed oil containing two ounces of turpentine and one-half ounce each of tincture belladonna and nux vomicae is the first procedure, followed by two dram doses of tincture of nux vomicae at three hour intervals, and at the end of twelve hours an aloes ball. In the meantime, if the pain has ceased (which frequently follows in three to four hours after giving the oil) a hypodermic injection of arecoline one-half to one grain is advantageously employed. As the horse usually refuses to drink, when we feel that water would be such an advantage to him, much benefit can be derived from the frequent administration, all through the day and night, of flax seed tea given as a drench, so that one and a

half to two pails are given in the twenty-four hours. A large percentage of cases of impaction of the small intestines will gradually respond to that line of treatment, augmented by high enemas; although they may require from four days to nearly twice that long to accomplish it. Where cases do not respond, or seemingly respond but eventually terminate fatally, I am inclined to think from observation, in the light of present day knowledge, that we have erred in our diagnosis, and are dealing with a condition that has recently been recognized, in which, to my mind, there is a considerable similarity of symptoms. In view of the fact that it is a recently recognized condition, I will consider it at the end of my paper. Our next patient is similarly affected, in which perhaps the pains are more dull at the onset, although they become very marked as the condition progresses. I refer to *Stoppage of the Bowels* or *Impaction of the Colon.* Authorities on the subject, who have had considerable opportunity for post-mortem study, can describe symptoms to apply to each particular portion of the large or small intestines in which the stoppage has occurred, but I do not think the average practitioner can so differentiate. For myself I am content to locate it in either the large or small intestines and will not theorize here on subdivisions which you can read in your text books. The symptoms in obstruction of the large intestines do not seem to me to be so clearly defined as in that condition in the small guts. As stated the pains at the onset are decidedly dull, and the owner hesitates to call a veterinarian; but as they persist and seem to increase in intensity, causing the horse to crouch, walk around the stall if in a loose box, make repeated attempts to lie down but catch himself before getting really down, the owner becomes alarmed and the veterinarian is called at that stage. The pains come to an end and repeat themselves at intervals—the horse sometimes holding his breath for a time, during the paroxysm. Rectal examination shows that bowel to be empty usually or containing a few mucus-covered balls—sometimes it is ballooned, and there are violent straining efforts on the part of the horse, as though trying to pass manure. In other cases we find the rectum in a state of impaction. We

empty it and can appreciate impaction in portions of other parts of the intestines that are seemingly crowding backward by the expulsive efforts. In severe cases there is patchy perspiration, and short catchy breathing. The pulse and respiration are our best guide as to the outcome. These cases call for practically the same treatment modified to fit the conditions, as suggested for obstruction of the small intestines, except that irrigation plays a more potent part, in my opinion, as fluid can more readily be thrown in the desired place. It is understood that in these obstructions I am dealing strictly with fecal matter, as time would not permit entering in the discussion of calculi, hair balls, torsion, intussusception, etc. Neither will I discuss enteritis beyond expressing it as my opinion that in a case of enteritis, correctly diagnosed to be such, there will be a fatal termination. So I will now consider briefly, as my knowledge of it is necessarily limited, a condition of colic in horses that has recently been recognized that is of vital interest to us because of its gravity. I refer to *Impaction of the Caecum.* Described first by Professor Gofton, of the Royal Dick Veterinary College of Edinburgh, and discussed by him in a paper presented to the Scottish Metropolitan Veterinary Association in May, 1912, it was first described by an American veterinarian in an article entitled *Equine Typhlitis With Impaction,* by Willis Wilson, of Dayton, Washington, and published in the May, 1913, issue of the AMERICAN VETERINARY REVIEW. The following year another American veterinarian, A. T. Gilyard, presented a paper to the Connecticut Veterinary Medical Association, under the caption, *Impaction of the Caecum In the Horse,* published in the AMERICAN VETERINARY REVIEW for March, 1914; after which, Dr. Gilyard read Dr. Wilson's article, published ten months prior to his own, and immediately made another valuable contribution to the literature on the subject, including a method of treatment, which article was published in the AMERICAN VETERINARY REVIEW for April, 1914. In those three articles is included the writing to date on this important condition by American veterinarians. Since the publication of these articles, I have been on the lookout for this condition, and feel that I have met it in a few fatal

cases of colic, and also feel that in years past, a few long-drawn-out cases of supposed impaction of the small intestines that finally terminated favorably were in reality *Impaction of the Caecum.* Some of the symptoms in common are the dull pains, the long intervals of quiet lying upon the left side, occasionally lifting the head in the direction of the right flank, diarrhoea preceding the attack, and the bad smelling clay-like passages when bowel movement has been established. One diagnostic point mentioned by these authors is that in caecal impaction full copious purging does not relieve the patient as in ordinary impaction, but leaves the horse in just as much distress as before, because nothing has been removed from the *cul-de-sac* formed by the caecum Where relief is not obtained, death usually results from a rupture of the organ at its base, due to distention. This peculiarly shaped intestine, a little over three feet in length and with a capacity of about seven and one-half gallons of fluid serves the purpose of a sort of reservoir, in which the water that the horse drinks is received directly from the stomach, through the small intestines; reaching the caecum within a short time after ingestion by the horse. The caecum is said to be filled at all times (in health) with a pea-soup-like fluid, which is probably the nutriment from the food ready for assimilation; the solid matter passing through the digestive tube, going directly from the ileum to the colon without entering the caecum. It would seem that when such a condition of affairs does *not* exist, our patient is exposed to the dangerous condition of impaction of the caecum and death from rupture of that organ.

Forming, as it does, a *cul-de-sac* hanging below the line of the canal through which the solid material passes, and seemingly dependent upon the physiological perfection of the act of passing the material from the ileum to the colon without its getting into the caecum, that organ would seem to be a constant menace to the horse's safety, whenever disturbance of the digestive function manifests itself. It suggests a gigantic appendix. In experimenting with caecums removed from dogs, I have found that water injected into the ileum will pass directly to the colon without entering the caecum; but injected into the colon

it does not pass directly to the ileum, but goes down into the caecum; which has suggested the possibility of caecal impaction being a secondary condition, due perhaps to obstruction of the colon. Whatever the cause, it would seem that with the premonitory symptoms and those referred as indicating dull pains and the opportunities for rectal examination, a diagnosis can be arrived at fairly easy. Now what is the prognosis? We know so little about this condition as yet, not knowing positively how many cases of the kind we have had, how many of them we have lost and how many we have saved that a prognosis seems difficult to arrive at, but must at least be guarded and somewhat grave. Dr. Willis Wilson says he saved forty (40) per cent. of his cases and treated on an average fifty a year. It will depend upon what degree of perfection in the line of treatment can be formulated. In as much as that this bowel in a normal state contains only fluid it would seem that the indications for treatment are to irregate, with the object of softening up the impacted mass and if possible rendering it fluid. How is this to be done? Dr. A. T. Gilyard, in his article in the April REVIEW, suggested the introduction of the trocar through the abdominal wall, and by the means of a rubber tube attached to it introduce as much water as you desire directly into the caecum and cites a case in which he employed that method, pumping seven and one-half gallons of warm water in, in which had been dissolved one-half pound of sodium chloride and a pound of magnesium sulphate, with the emptying of the caecum as a result, although the patient subsequently died. Probably that procedure and the treatment suggested for ordinary impaction of the intestines would be the proper line to pursue.

I have been wondering too if the lock injection syringe that does not permit water to escape when pumped in, would not find its way to the caecum once the colon was filled. That of course would necessitate the injection of a very large quantity of water. As my whole paper is made up of suggestions resulting from my observations, and open to criticism, I shall hope for a solution being offered for this as well as the other less grave conditions referred to. I would like to say, however, before

closing my paper with a few remarks on prophelaxy, that I would insist that it is every veterinarian's duty to make a rectal examination of every colic case that he is called upon to treat; and failing to do so, he has failed in his duty to his patient, his client and himself. Reason for this stand will come out in the discussion.

Now in regard to *prophylaxy*, it has occurred to me that in its relation to "colic" this treatment does not cut much figure with the average veterinarian, although advocated and practised in connection with other conditions. And yet colic claims more victims than any other malady to which the horse is heir. I believe then that it is our duty to study the causes of colic and advise our clients how to prevent it; or at least lessen its occurrence. A three hundred and fifty dollar horse in perfect condition this morning is hauled out dead to-morrow morning. Can we not do something to prevent this fatal malady? Obviously it has to do with the method of feeding! Professor Gofton has suggested that the habit of *not* watering again after the evening meal was a *cause*, as it occurred much less often when that practice was ceased in the stable, and the custom was changed to watering later in the evening, after the evening meal had been eaten. An acquaintance of mine, a well qualified, thinking, veterinary practitioner, has come to an exactly inverse conclusion, and would have the horses watered *before* feeding and not again until before the morning meal, on the theory that the ingestion of water after feeding tended to interfere with digestion by washing the gastric juices out of the stomach before they had completed their work, together with part of the ingesta, into the intestines, where fermentation and colic resulted. This same veterinarian advocates frequent watering through the day, while the horse is at work and letting them drink all they want on their return to the stable at night without first cooling out; then feed and not allow them to drink again until before feeding in the morning. His theory about letting them drink all they want on returning in the evening is that having been watered at frequent intervals all through the day they will not drink too much at this time. My plan is to let a horse have water frequently during

the day and not watering for at least two hours after feeding, believing that the water entering the stomach, especially if very cold, will interfere with digestion, even if it does not remain there long but passes on to the caecum. I believe in having a heated horse cooled out before feeding, believing that the stomach of an over-heated horse is not in condition to digest food. I believe, too, that fatigue interferes with the flow of the gastric juices and therefore that a feed taken by a tired horse is likely not to be thoroughly digested, and colic through the fermentation of the food results. So I would permit the horse to drink all he wants before feeding in the morning, filling up the caecum then two hours after feeding, more water keeping the caecum full; the last drink of the morning being given an half hour before the noon feed. Two hours after the noon feed, water again, and so on up till time for the night feeding, half hour before which the caecum is again filled. Assuming that the horse is fed about six or seven o'clock in the evening, no water until twelve midnight. Standing quiet in the stall that will last him until the drink before breakfast. I do not favor cooked, steamed or wet feed; but prefer feeding clean oats of the best quality, with the addition of a little bran at night. Horses should have salt provided *ad libitum*.

In Professor Sisson's article in the July and August issues of the AMERICAN VETERINARY REVIEW, entitled *Some Mechanical Factors In Digestion,* he states that conflicting views have been expressed in connection with the effect of watering on the stomach contents, some claiming that the food will be washed out of the stomach, " hence the golden rule of experience that horses should be watered first and fed afterwards." Again the results of other observers that he quotes, was to the effect that when the stomach was filled the contents were only superficially penetrated by the water which passed over it into the small intestines and on to the caecum, but in the stomach only partly filled the contents were saturated with the water. And so I expect there will be differences of opinion here which I hope will be freely expressed, as I am deeply interested in the subject and feel sure that you can materially assist in its elucidation.

HORSESHOEING IN MANY COUNTRIES.*

By W. J. Kent, New York, N. Y.

Before dealing with the title of this subject it may be well to go back to the time that man first thought it necessary to protect the foot of the horse, so as to make his use of more value.

Xenophon who was a horseman and soldier, along with his other accomplishments, advocated the use of leather soles, tied on with straps. On account of the improper adjustment of these straps this system for the protection of the foot was not long practiced.

There immediately followed another system which was composed of woven fibre soles, at the same period. As the use of the horse was evidently being more recognized the brain of man was working fast to find a better and more practical means to protect his feet, and they formed the idea of pouring tar on the sands, and walking the horse over it, so as to give him an artificial sole; this may have been a quicker way to have him shod, but it is doubtful if it were as practical as the others which I have explained.

The Romans were the first to use metal in the form of sandals, for this purpose, and it is stated that Nero, the Roman emperor, even used gold and silver on his horses' feet.

The Celts were the first to use iron turned into a shoe and attached to the hoof with nails, which form of shoeing is universally established to this day.

This brings us from a period where horseshoeing was in its crudest form to the present day, where it is classed as an art. Different countries have their different forms of horseshoeing, and rightfully so; as, let us take the human race, the shoe adapted for the arctic climate is not suitable for the tropical climate, and the same argument holds good for the horse.

* Read before the Veterinary Medical Association of New York City, December 2, 1914.

Let us start with Australia, a tropical and semi-tropical climate, where horses in my younger days were wholly used for commercial purposes as well as for pleasure; all horses are shod plain in front, and on the hind feet on draught horses a low heel is used; the feet are as a rule very round with a rather flat sole, but the horn is tough, on account of the majority of these horses being bred on the plains. Bar-shoes in front are common when the horse is in use for two or three years, as corns are almost universal when such feet are continually shod. Thoroughbred racing is continual all the year round, and the feet of these horses are carefully looked after from the time they are foals, by keeping them in shape with a rasp, never touching the sole of the foot, and rounding the edge of the outer shell so as to keep it from breaking. They run their race horses on turf barefooted, and very often, when the track is wet they have two nails driven in at the toe and clinched.

This system of late years has been superseded by the aluminum steel-rimmed racing plate, which only weighs from 1½ to 2 ozs., covering all four sizes, and this form of shoeing, of this class of horses, has become very popular, especially since Carbine, one of the greatest of race horses, won the Melbourne cup, shod with these plates.

Being a born Australian and having learned the trade of horseshoeing in that country, starting at it when I was thirteen years old, I am very familiar with all I have stated.

I took a trip from Melbourne to Cape Town, South Africa, when that country was a blank north of Natal; and although they have brought the art of shoeing at the present time to the ordinary European standard, at the time I was there the crudest kind of work was done, and I returned to Melbourne by the next sailing ship; not on account of what I have stated, but I did not like the place.

Tasmania, which is a large and very fertile island on the southwestern coast of Australia, has a great number of horses, and the form of shoeing is practically the same as that done in Australia.

New Zealand, which is about 1,200 miles from Australia, has a different breed of horses, especially for commercial purposes, Suffolk, Punches and Percherons, also the stocky cross breed predominates. This class of horses require a heavier and stiffer shoe. This is the first place I ever saw a toe-calk welded on a horseshoe, and I well recall stating, in my youthful ignorance, that the horse would break his neck, an hour after leaving the shop.

I still maintain, however, that they shoe their horses entirely too heavy for the work they do, as the climate, being of a damp nature, they having a large percentage of rain yearly, the hoof is soft and spongy, and cannot carry their heavy shoes for any length of time without encountering the many ills the horse's hoof is heir to. Common ordinary shoeing predominates in this country, as the majority of the population are by nature of the farming and commercial class; therefore there is very little variety in the art.

Coming up the Pacific Ocean, we will have to pass Samoa where I remained three months on the Island of Tutuila, which at that time belonged to the French. No horses were shod, as there were only a few on the island, and they went barefooted.

We next come to Hawaii—at the time Liliuokolani was queen. Horses even at that time were fairly plentiful on the island, and especially in Honolulu, where there were a few very good mechanics running shops. All the horses were shod plain, no toe or heel on either the front or hind shoes.

You must understand that up to this time I never saw either a machine-made finished horse nail nor a machine-made horseshoe. When I served my time learning the trade, we often had to split a Swedish piece of iron shafting into strips, beating it out into nail rod, and make our horse nails out of it. . . . Horseshoes we could make of anything, providing it was iron, and it was often our job to fold up worn old shovels and make horseshoes out of them; all old worn shoes were doubled over and new ones made from them.

From Honolulu I came to San Francisco; and it was there I first got a practical finished education in the art of horseshoeing.

It was at the time when the American trotter and pacer were being developed for speed, and as you, gentlemen, are well aware, the shoeing of their feet had as much to do with the high state of perfection this distinctive type of horses have been brought up to, as the years of scientific breeding, that made them the peers of the world.

You are also so familiar with the different grades of shoeing which we have here in this country, that I feel it would not be interesting to you that I should spend any time in describing them; therefore we will pass this over with one of the broadest statements that ever came from a man, and I will make it from an unprejudiced mind without any fear of contradiction. America and American-born horseshoers lead the whole world in the science and skill of horseshoeing. Why any intelligent body of men should conceive in their minds the idea that any foreign-born man who grew into manhood and learned the trade of horseshoeing outside of this country, was more qualified to teach our youth this trade, that we in America have raised to an art, is beyond conception.

I will still go further and state we have American-born horseshoers that *can* and have shown all their boasted Europe the scientific art of horseshoeing; and until one of these men are selected as the practical head of any school which may be established for such a purpose, in this country, such schools are failures before they are started.

About sixteen years ago I went to Europe, having at that time a half interest in 12 patents taken out there—all on horseshoes and machinery for making them. At the time I was connected with an American Horse Shoe Co., who owned the other half, and the object of my trip was to form a company in England or lay the foundation of an export business from our factory here.

Landing in London, and having had previous connections with the late Sir Francis Evans, then member of Parliament, through him and Cecil Baring, of Baring Bros., the bankers, I had full *entree* to the Royal College of Veterinary Surgeons, at the head of which was Dean McFadean and Prof. McQueen,

whose courtesy and friendship to me shall never be forgotten. I had samples of all the different shoes we manufactured, and among them some aluminum steel-rimmed shoes, especially adapted for army and thoroughbred race horses.

I demonstrated the usefulness of these shoes by shoeing a number of horses in the 1st and 2d Life Guards under the immediate supervision of Vet. Major Flintoff and Sergent Farrier Peacock. I took off of their cavalry horses, 32-oz. shoes and put on 6½-oz. shoes, and proved by actual wear that our shoe gave all the required satisfaction in wear, the horses shod did more work with less effort, and they obviated slipping on the greasy streets.

Here are some of the shoes for your inspection, that were on for six weeks, the heavier ones when new weighed 12½ ozs., the lighter ones 6½ ozs. (Various shoes were exhibited.) Going to the College of Veterinary Surgeons, Prof. McQueen had no confidence in this shoe, as he stated they had a museum full of such specimens, and they all broke, especially some they got from Germany. I proved to him that he was wrong and won his confidence on the spot. He asked me if I would shoe one of their subjects, and demonstrate our American style of shoeing to a class of students; which request I accepted, and at 9 o'clock the next morning I "stripped for action," having a set of my own shoeing tools with me.

When I picked up that horse's front foot there was a shoe on it 1½ inches in width and ½ inch in thickness; and I could have sworn he was foundered on account of the amount of sole that had grown under that shoe. It was so large and clumsy I could not remove it with any tool I had, so he got their horseshoer to take it off. After the shoe was removed I took my knife and picked the sole at the point of the frog, and found at a glance that instead of founder the horse had grown a double sole, the cause of which, and everything connected with it, I had to explain to the students in my own crude practical language. Inflammation had set in during the time it took to grow this sole and had apparently disappeared under treatment; which was shown

when I took the complete sole off without breaking, and showed the most beautiful new sole and frog that I had ever seen, above it.

I then trimmed the horn down to the proper angle, and made such a satisfactory job when I was finished, that Prof. McQueen asked me to shoe Dean McFadean's horse next day. I realized the honor given me, and when this beautiful horse was brought into the shop I almost cried when I saw his feet, and how he was shod. He had on a set of full interfering shoes, the inside half being turned on its edge, and the nail holes ending around the toe. The whole inside quarter was rasped away, leaving that part of the foot V-shaped. I asked Prof. McQueen why he was shod that way, and he said to keep him from interfering.

This horse in conformation was perfection itself, and I frankly told him the horse would not interfere if properly shod, leaving as much radius of horn on the inside as on the outside, measuring from the center of the frog. I stated that they had rasped away what nature grew, and then tried to offset it with an artificial horn, by turning that part of the shoe on its edge. He still disagreed with me, and I asked permission to shoe him my way, which he reluctantly gave me, if for no other reason than that he thought I would (as he put it) get a "black eye," should I fail.

I levelled that horse's foot by cutting a strip of my leather apron and doubling it to put under the inside of the shoe, lowering the outside as much as possible, and leaving the whole contour of the shoe perfect so that when it was adjusted the horse had as much bearing on the inside as on the outside. To do this the inside of the shoe lapped over the foot from the quarter to the toe so much that I could not drive a nail, and so as to keep the shoe on I had to put in an extra nail-hole at the inside heel. All of this had to be explained to the students; and I am pleased to say the horse never touched a hair as long as he wore those shoes.

I found that 7 out of 10 of all their fine horses were shod

with interfering shoes, and I frankly told them they were 50 years behind the times, in this art.

France has some beautiful horses, and great care and science is used on the shoeing of their feet. Charlier was at one time the great exponent of what afterward became commonly known as the "Charlier Shoe." This shoe was extremely narrow in the web, as he claimed the shoe should only be seated on the outer horn or shell of the foot, and the system of putting it on was to shoulder or sink the shoe down on the rim of the foot, not touching the sole, but having it flush with the thickness of the shoe when finished. This form of shoeing died a natural death, as you all are well aware that the seating of a shoe should be wide enough to support the connection of the sole with the outer horn, so as to assist in sealing this connection, during its growth.

France was as far behind us at the time I mention as England. Germany was the crudest of the three in the art of shoeing, and the manner in which they handle the foot to shoe it, even to-day, is a joke to us in this country.

The man who brings his horse to the shop to get shod has to hold his foot; if not, another is provided for that purpose; under such conditions the science of levelling the foot and properly adjusting the shoe is entirely out of the question. They advocate shoeing horses with a shoe made of a cast metal frame formed into a channel, with nail holes in the channel, and after this frame is nailed on they fill the channel with a tarred rope; all of which is a travesty on science and progress of the art.

Coming home to America, I say again without fear of contradiction, we are the peers of the world in this art, and I cannot conclude my subject without referring to the different position that our American veterinary profession holds in our Army as compared with their European brothers; and I respectfully suggest the following: Let the officers of our Army learn the art of war and put our veterinarians in full charge of our army horses, with a rank suitable to the position which they are fully entitled to. Gentlemen, I thank you.

HOG CHOLERA AND METHODS OF CONTROL.*

By Dr. E. A. Cahill, Mass. Dept. of Animal Industry.

When requested by your committee to read a paper on the subject of cholera I agreed readily enough, and without much thought of what was desired. Later thought, however, when about to prepare my paper caused me to realize that in the short time allotted to such a paper, we can do no more than start a consideration of this exhaustive subject, because every person present realizes that, instead of a short paper, an exceedingly large book would be required to consider comprehensively all phases of this disease.

I may say that this is not written as a strictly scientific discourse, but to bring to discussion a few of the logical and yet scientific facts which may help us arrive at a clearer understanding in our consideration of this disease as applied to its practical aspect. It naturally follows, therefore, that many important points will not be considered and that we can consider only briefly and inadequately the few thoughts which I present. I must, therefore, ask those of you who are familiar with the theoretical and practical aspects of the control of hog cholera to be lenient with your criticism of my brief survey of this subject.

Allowing our minds to revert to the time previous to the discovery of anti-hog cholera serum, we vividly recall the hopelessness which we felt upon discovering cholera prevalent in a locality. We also recall our thoroughly inadequate recommendation of intestinal antisepsis and isolation of affected animals. Is it strange then that the public concluded that they knew as much regarding the disease as we? Or is it strange that upon the discovery of a preventative they were slow about sharing our enthusiasm? Since that time, results from the treatment have been so uniformly good when properly applied that skeptics have prac-

* Presented to the Massachusetts Veterinary Association, at Boston, October, 1914.

tically disappeared, and all scientific—or better, all intelligent—men are united in believing that the serum treatment together with proper quarantine and enforcement of sanitary measures, affords us our one hope in our great fight. As a result, the demand for the treatment steadily increases, and it behooves all of us to be not found wanting in our preparedness as regards cholera, its treatment and its control.

For some time past, the double versus the single treatment has been the chief topic of discussion. Each has been valiantly defended by its supporters and bitterly assailed by its opponents until few, if any, of the shortcomings of either remain unexposed. As a result of all that has been said and written, we know that both treatments are of great value. The remainder of my paper is offered as logical conclusions deducted from our experimental research work and the results of practical inoculations in many herds, together with the opinions of the leading authorities on this disease.

I assume that we are all thoroughly familiar with the theories of immunity, particularly with Ehrlich's side-chain theory. All of the conclusions and efforts pertaining to the serum treatment of cholera have their foundations on the principles of immunity. It is absolutely necessary, therefore, that those principles be thoroughly understood. It is then an easy matter to decide our method of procedure and when to use the single and when the double treatment.

The single, or simple, treatment, as you know, consists of serum only. It is used where we desire a temporary immunity. As a rule this is impractical on healthy herds because it would require too frequent revaccination. It is of value, however, when used close to marketing time, for protection during show-time, and for pregnant animals when exposed, until the period of gestation has passed. This same single treatment may cause a permanent immunity if shortly after its injection the animal is put into an infected pen, and subsequently picks up sufficient virus. This is what is commonly spoken of as "pen infection." This, however, is in our opinion a very uncertain procedure.

The single treatment is also employed when an animal has a temperature too high for the practical application of the double treatment.

The double, or simultaneous, treatment consists of the injection of a small amount of virus to stimulate the cells of the body to the production of their own antibodies, and simutlaneously injecting protective serum to safeguard the body during this cell stimulation. Regarding doses, we get our best results from the following scale:

Serum: 20 c.c. for every 50 lbs. of live weight.

Virus: Animals up to 30 lbs., ⅛ c.c.; from 30 to 60 lbs., ¼ c.c.; from 60 to 90 lbs., ½ c.c.; from 90 to 120 lbs., ¾ c.c.; above 120 lbs., 1 c.c.

Double treatment should not be used in animals in sick herds which show a temperature above 103.6, in healthy herds not on animals showing a temperature over 104. I wish here to particularly urge the use of the thermometer. We should never, under any consideration, administer the double treatment without first taking the temperature of every animal. Many animals will show a temperature which will make the double treatment prohibitive, although they show no clinical symptoms. Never use virus on cases showing symptoms of chronic infection.

To recapitulate. The single treatment has the following advantages:

1. It has a curative as well as a prophylactic value. The exact value, however, cannot be calculated. In some herds it will save a great many animals, while in others the percentage saved will be very low indeed. When used as a curative agent, give at least half as much more serum than you would give a healthy animal. Oftentimes it is of great value in these chronic cases to reinforce with a second treatment one week after the first.

2. It protects animals, such as pregnant animals, which would otherwise be exposed to danger.

3. It prevents the objection of using virus on non-infected farms.

The last, however, we feel should not be charged too seriously

against the simultaneous treatment. We are thoroughly convinced that if it be administered correctly and painstakingly there is no need of the operator infecting the premises in any way. When the double treatment is used scientifically the animals will only in very rare cases show a rise in temperature, or any clinical effects. Consequently, while they may be called " virus carriers," they do not eliminate infected material, except, as previously stated, in extremely rare cases.

We may summarize, therefore, the advantages of the double treatment as follows:

1. It confers a lasting immunity without a greater cost than the single treatment.

2. It confers a temporary immunity on pigs from sows so treated.

3. We are certain the animal has received the virus and in the proper proportion. This relieves the uncertainty which we feel after using serum and placing the animal in infected pens. Here we have no way of knowing whether the immunity is active or passive until deaths occur to discredit our treatment.

4. It allows us to permanently immunize herds before the disease causes the death of a large number of animals. This is without danger of infecting the premises as before pointed out, if properly administered.

It is on non-infected herds that we get our most satisfactory results. Before pursuing this subject to its completion, a perusal of our figures may be of interest. Of all animals, presumably infected, treated by the single method, 9 1-3 per cent. have died: of animals treated by the double method, 1 per cent. have died, and of those, 3-10 per cent. have died from septic conditions, leaving 7-10 per cent. that have died through cholera infection. These figures, as you see, are most gratifying, and speak most highly for the double treatment. One interesting factor is that we have never had an animal die from the simultaneous treatment in a healthy herd. We must, however, expect some deaths from anaphylaxis. We feel that all our deaths have occurred in infected herds only in animals which already had virus in the system

but which showed no symptoms. This condition, however, every operator must expect to occasionally find. Practically all of the herds which the state is called upon to treat are badly infected herds with many dead or dying, with many others too sick to treat, and with an infection which has probably existed several years. Consequently, we feel that under these conditions our figures are extremely low. That the percentage lost would be even better in healthy herds is a logical conclusion.

One objection offered to the double treatment is that it does not immunize for several days after being given. This we feel cannot be substantiated. Our experiments satisfy us that the protection from the double treatment begins just as soon as from the single. If this were not so the virus would very soon cause symptoms of cholera. We have repeatedly placed badly infected animals in pens with animals which have just received the double treatment, and we have yet to see unfavorable results.

It is apropos at this time to mention a few of the common causes of failure:

1. Improper diagnosis.
2. Too much virus.
3. Too small an amount of serum.
4. Chronic infection.
5. Animals which have taken virus into their systems a few days previous to treatment but which show no symptoms and have a normal temperature.
6. Animals which have picked up virus after being returned to the pen.
7. Septic infection.
8. Injecting too large an amount of serum at one site.

Regarding the *first* cause I feel that we cannot go into the matter in our limited time. The subject in itself would make an extremely interesting paper.

Second. We know there is a tendency to use too much virus. We are of the opinion that in say a 50-lb. animal ¼ c.c. will cause the desired effect just as effectually as ½ c.c. by stimulating the cells to the production of the necessary antibodies, and at

the same time it diminishes the danger. In infected herds the amount of virus should be made even smaller than that noted above.

Third. Regarding the serum. We find 20 c.c. for every 50 lbs. live weight to be a proper amount in uninfected animals. In animals showing a temperature of from 103.5 to 104 in uninfected herds, diminish the amount of virus and increase the amount of serum one-half. In cases showing temperatures over 104 where serum is being used as a curative agent, give one-half more serum than to a healthy animal. Make one infallible rule—always use too much serum rather than too little. It can never harm, and it may save many cases.

Fourth. Never give virus to an animal showing symptoms of chronic infection. These animals have a lowered resistance, the power to produce antibodies seems to be greatly reduced, and they succumb very quickly after vaccination. We are doing experimental work at present along these lines and hope that soon we will be able to have a curative treatment for such cases. At the present time, a reinforcement as above stated is our best recommendation.

In *five* and *six,* those animals obtain more virus than the operator intended, and as a result have not sufficient serum to protect and contract the disease. Even the most experienced operator will lose a few animals from this cause in infected herds.

Seven. Septic conditions. These can be almost entirely overcome by the operator; first by refusing to vaccinate unless sanitary conditions of pens and yards are satisfactory at the time of treatment and for several days following; secondly, by the most painstaking sterilization of instruments used and antisepsis of the point of injection. If this is properly done, abscesses and septic infections will be few indeed. Liquor cresol compound, or lysol, in 2 per cent. solution should be used for scrubbing the skin, and the site of injection should always be painted with iodine. Needles, etc., should be kept between injections in your antiseptic solution. We should ever remember that the

better our antisepsis, the better our results will be, and that even the most stringent measures along this line are not sufficient.

Eight. In injecting the serum, do not inject too large a quantity at any one place; never more than 10 c.c. in one place, and in small animals 5 c.c. Make your injections subcutaneously and remember that you must get good absorption or endanger the animal. If too much be injected at one side, encapsulation frequently occurs with the result that the serum is not absorbed. The virus which is injected deeply into the muscles is absorbed and the animal contracts cholera.

One of the greatest considerations to-day is the protection and immunization of the young pig; and with your indulgence I will briefly discuss this matter. The cells of young pigs seem incapable of producing their own antibodies until they are from ten to twelve weeks old. Therefore, it is of no value for us to attempt to stimulate them to activity by the use of virus until that time. Pigs from immune sows are of course temporarily immune, this immunity lasting until weaning time or shortly after. If they are weaned at from ten to twelve weeks old, 1/8 c.c. of virus and 20 c.c. of serum will be sufficient to give the desired active immunity. If they are not from immune sows or are weaned earlier, the best procedure is to use serum for a passive immunity until the age already given, at which time they should receive the double treatment. The double treatment given to animals under ten weeks old *will rarely give a permanent immunity* and therefore has no advantage over the single. On the other hand, it doubles the danger. Very frequently we, who advocate the treatment so ardently, are asked why if the treatment is so successful cholera is still on the increase. In concluding my paper I would like to point out a few of the reasons.

The first is because in my mind many men are using virus who do not understand the laws of immunity, who do not use good judgment, and consequently are incapable of using virus. The second is because many of us have not been sufficiently conservative. The enthusiasm for the serum treatment has caused some to use serum and virus promiscuously and depend upon it

entirely. Many men have beguiled themselves with the idea that serum would cure anything. They forget that it is a specific; they forget that the disease is a contagious one, that the most stringent quarantine possible should be enforced, and that grounds and buildings must be rid of the infection; they forget that they themselves may and do carry contamination on their shoes, clothes, etc., that their horses, autos, etc., may be carriers to other farms which they may visit; they forget the danger of a single drop of virus; they do not use the proper amount of virus; they do not have dead animals burned; they do not report cases promptly. All of these are reasons why cholera is on the increase; not *because* of the serum treatment, but *in spite of it.* As has been well said, " a little knowledge is a dangerous thing "; and it is even more dangerous in a professional man than in a layman. In place of the skepticism which formerly prevailed, we must apprehend even a greater danger in too great a certainty. Ignorance and carelessness will prove greater enemies to our advance against cholera than skepticism ever did.

A proper diagnosis, the careful and scientific use of both single and simultaneous treatment in their respective places by well-trained men, a strict quarantine and proper sanitation; these are our sure paths to our goal—the control of cholera.

SPRING STEP HORSESHOE WINS SILVER CUP TO REVERE RUBBER COMPANY: At the recent Horse Show in Madison Square Garden, Major Charles A. Benton awarded the silver cup presented by the *Rider and Driver* for the best complete commercial device, most suitable for public use, to obviate the slipping and lameness of horses, and at the same time to preserve street pavements, to the Revere Rubber Company for their Spring Step Horseshoe. This shoe has a rubber ground surface over its entire length; and is so constructed that the rubber is always in contact with the pavement, and actually outwears the metal part of the shoe if kept on long enough. The cup was strictly a reward of merit, and fitting encouragement for earnest efforts directed in the production of a non-slipping shoe; and we congratulate the Revere Rubber Company on its accomplishment in the production of this shoe, quite as much as on the winning of the cup.

SOME SUGGESTIONS ON RIDGLING CASTRATION.*

By C. Frazier, B.S., M.D.V., M.D., Dean McKillip Veterinary College, Chicago, Ill.

But few surgical procedures in veterinary work offer to the practitioner the difficulties in mastering equal to those presented by the ridgling operation. This is true because, first, the operation is beset with real difficulties and real surgical risks; and second, because in a general country practice, as a rule, the number of cases presenting themselves for operation is so limited as to deny the surgeon the privilege of sufficient experience to become expert in the work. It has so happened that I have had an excellent opportunity of observing the difficulties experienced by beginners in the work, and of analyzing the causes of such difficulties, and it is my purpose in this paper to discuss briefly the chief troublesome conditions arising in the operation, and to suggest ways and means of overcoming them.

The veterinarian who has attempted the operation in a sufficient number of cases to realize the dangers and who has not yet reached the stage of surgical perfection to allow a feeling of security, will approach the operation with three things to be feared uppermost in his mind. These are, in order of supremacy, the difficulty of finding the testicle, and second, operative and post-operative protrusion of the bowels through the wound, and third, sepsis. All other surgical hazards arising in the operation are of minor importance and need not be considered here.

The difficulty in finding the testicle is the greatest source of trouble to the operator. The hidden testicle in ridglings is usually a flabby affair not unlike a bowel to sense of touch, and unless the operation is properly executed must be separated out and identified from the mass of small bowels with which it is more or less closely associated in operation. The touch sense perception

* Read at the 32d annual meeting of the Illinois State Veterinary Medical Association, Chicago, December, 1914.

of the operator must be keen, and he must have had experience in order to make such an identification; for with the hand or the finger in the abdomen crowded on all sides by the floating viscera of the cavity, the operator is under considerable handicap in his examination and search for the organ in question. Protrusion of bowels through his operative wound or the fear of making the mistake of pulling down a bowel instead of the testicle makes the task of locating the testicle all the more difficult.

At this point I wish to discourage the belief, which, if not now, was formerly a rather popular one, that it is a good method to pick up the *vas deferens* over the bladder and trace it out to the hidden testicle. This is never a process of value, and requiring, as it does, the introduction of the entire hand and part of forearm into the belly, it increases the risks of the operation by leaving a dangerously large opening. The *gubernaculum testes,* that intangible structure so often mentioned as a guide to the testicle, is valueless as a surgical landmark. Any one who can locate, identify and trace out these structures has a sufficient knowledge of anatomy and a sufficiently keen touch-perception to locate the testicle by a safer and better means.

The key to the easy finding of the testicle is expressed by the following single statement, namely: The entrance into the peritoneal cavity must be made through the internal inguinal ring area, or to be more exact, through the upper and posterior quadrant of that area. Let us see why this is true. First, an opening of this sort brings the operator into the belly at the very location of the testicle and its adenexa. The ridgling testicle is attached to the belly wall by a membrane, the mesorchium, the line of attachment of which extends upward and slightly forward from just above the internal ring. The testicle and its adenexa, almost without exception, lie just inside the internal ring, and the least anomalous of all the anomalous conditions in ridglings, is the attachment of the mesorchium. Consequently, entrance into the belly at the ring brings one into the very position of the testicle and its membrane of attachment, and often the testicle is pushed out through the opening as soon as it is

made. There is a little gush of peritoneal fluid and out slips same past the testicular structures. The second reason that an opening so placed makes for ease in finding the testicle is, that the opening is high up on the side of the belly at the pelvic inlet and away from the mass of small bowels. Operating through such an opening it is rare to have a small bowel come within the operative field. The fingers entering the belly will immediately come in contact with the testicle or its cord or may feel the rectum or the pelvic flexure of the great colon. The small bowels are anterior and lower down than this point and seldom interfere in the operation. If by chance a loop of the bowel instead of the testicle should be grasped the difference may be told by the fact that the bowel offers a steady, although possibly slight, resistance to being pulled out through the opening, while the testicle comes out freely unless complicated by adhesions in which case it comes not at all.

An opening made at any other point than that described above will complicate the operation by making it necessary to search for the testicle. Lower down or farther forward brings the operator into the belly at a point distant from the usual location of the testicle, and it is one constant anatomical factor, viz., the attachment of the mesorchium. Such openings require the introduction of the entire hand in the search and handicaps the operator by involving him in the troublesome mass of flotation bowels. Furthermore the surgeon has by such openings deprived himself of the valuable assistance offered by the tendency that even ridgling testicles have of descending out through the inguinal canal if they are but given a chance. I might mention at this point two things that may embarrass one in his manipulations. The first is the failure to break through the peritoneum, it stripping off ahead of the advancing fingers and making a large extra-peritoneal pocket in which the operator may become lost, failing to recognize the condition. The other condition is the breaking through into the base of the mesorchium. This puts the fingers into the loose mesorchium membrane where the testicular structures may be plainly felt, but cannot be grasped or drawn out into

the opening and which is very mystifying until properly interpreted.

Granting that difficulty number one is neutralized by making the entrance wound through the upper and posterior part of the internal inguinal ring area, let us consider for a moment how to locate this desired area. This is where most of the failures in the operation have their source. I have repeatedly noticed in demonstrating to the beginner in the art that it requires much less courage to dig a hole through into the peritoneal cavity at the lower end of the canal than is required to force the hand up the canal the proper distance to reach the internal ring. It is quite a distance from the scrotal cavity to the proper point of entrance into the belly and a great deal of force is required to push the hand up the canal. The first few times that one travels the road it seems to be a very difficult and very destructive journey, and one is very apt to hesitate before reaching the point of election, and make an opening through into the belly too low down and as well into trouble. A very good motto for the ridgling castrator to remember is, that the difficulties and the dangers of the operation vary inversely with the distance from the external inguinal ring to the entrance into the peritoneal cavity. Another thing of signal importance to remember is that though it seems very difficult and destructive to tissues to push the hand up the canal as described, it is much safer and better every way than to execute what seems to be the easier and simpler method of burrowing through into the abdomen lower down. In pushing the hand up the canal one is but separating the layers of the abdominal wall from each other and a knowledge of wounds tells one that such a wound is not dangerous.

In making an entrance up the canal it is essential to stay back against Poupart's ligament, peeling the fascia off from it with the fingers, and it is necessary to use extreme force in some cases; especially if the fascial filling of the canal is dense, if the patient is a muscular one or if the restraint does not spread the legs sufficiently. The fingers are pushed up the canal until the reflection of the fascia into the pelvis is felt, then they may be passed ex-

ternally along this line of reflection until the internal ring is felt or by other means the proper point for the opening is selected. To give an idea of the distance up the canal to go I will say that with the wrist lying on the prepubic tendon, the hand and fingers extended up the canal and the tips of the fingers on the line of reflection of the peritoneum into the pelvis, the finger points will be about at the point of election of opening; of course, making allowance for differences in size of hands and patients.

My advice to the uninitiated in the work, is to explore the inguinal canal of straight colts before operating a ridgling. When castrating these straight colts make the incision through scrotum only, leaving the testicle covered; pull the testicle and coverings down taut and slide the other hand up the outer side of the cord into the canal following the cord as a guide. By this means one can familiarize himself with all the points mentioned above. In doing this do not hesitate to force the hand beyond the point of entrance of the cord into the peritoneal cavity, for that is the area with which one must be familiar.

Considerable time has been given to the emphasizing of the above points because it is the one upon which the knack of the operation depends and the most difficult to master by those who have trouble with their ridgling work.

The second embarrassing condition that may arise in the operation, is the protrusion of bowels through the operative wound. This may occur during the operation, or it may be a post-operative trouble. I need not dwell upon the significance of the condition. It is an embarrassing complication, it prolongs the operation, it makes the finding of the testicle difficult, it exposes to sepsis and if of some magnitude may be an irreparable condition necessitating the immediate destruction of the patient.

The prophylactic steps to be taken to protect against this serious complication are these: First, the peritoneal opening must be small; second, this peritoneal opening must be at a point away from the mass of floating viscera (the small intestines and the colon); and third, the laparotomy must be made obliquely through the abdominal wall. The larger the opening the more directly it

is placed over the floating viscera and the more direct it is through the abdominal wall the more the danger of intestinal protrusion.

While it is possible to devise other satisfactory laparotomy openings, I do not believe that any could approach the inguinal canal route in efficiency. In using it we are following the suggestions of Nature. Nature built the inguinal canal for the purpose of allowing exit for the testicle, but in such a manner as to prevent the other floating viscera from being prolapsed. The peritoneal opening (internal ring) is small and placed where the small intestines and floating colon do not press upon it and the canal is oblique, valve-like in action, and is further protected by the overlapping thigh structures. Experience has taught us that the use of the inguinal canal route insures against intestinal protrusions. Furthermore it fits in with our scheme of easy finding of the testicle. We make our incision through the scrotum parallel with the median raphe and about one inch from it. The hand is forced through the external ring into and up the inguinal canal as described above.

Sepsis, the third danger of the ridgling operator's early experience, disappears entirely when he has become more proficient in the work. Sepsis is the progeny of a bunglesome prolonged operation, where there is much manipulation of the abdominal viscera and mauling of the tissues of the operative field. The conditions under which this work must be done are such that absolute asepsis cannot be obtained. However, ordinary attention to the cleanliness of the operative field, to the three instruments needed and to the hands used, coupled with a technique that insures rapid work will amply protect against this complication.

Dr. Dennis Appointed On Sheep Sanitary Board.—Dr. V. A. Dennis, of Springer, N. M., has been appointed veterinarian to the New Mexico Sheep Sanitary Board. One of the doctor's special duties, according to the Santa Fe *Eagle,* is to attend to the disinfection of cars in which sheep are shipped and keep close tabs on all cars so used. The doctor reports to the secretary of the board at Albuquerque.

VETERINARIANS SHOULD ADVOCATE HUMANE METHODS.

By Walter G. Hollingworth, D.V.S., Utica, N. Y.

Tender-hearted, kind, compassionate, sympathetic, humane should be the slogan of every veterinarian. They all express active endeavor to find out and relieve suffering; and especially to prevent it. He should stand as an index or representative, a leader of a party which advocates such a procedure. The veterinarian depends on the dumb animals for a livelihood to a very great extent; the necessity of their care and protection to him is of vital importance; to him the community are looking for such action, as they, too, depend on the live-stock interests to a very large extent for their food and clothing; and on such interests depends much, the prosperity of this nation, as agriculture is the foundation of such, and without live stock agriculture would be at low ebb, it behooves us as guardians of health, to act in such a capacity; to build a suitable structure upon the foundations laid for us at the veterinary school, from which we secured our degree. If we do not comply with the teachings laid out it is not the fault of the college; the faculty did its duty, it is for us to make good. To-day the veterinarian is looked upon as a person of intellectual ability; a promoter of methods that will increase his standing in the estimation of the community. Where his jurisdiction covers, he to-day is an authority; his opinions are sought, his decisions bear weight, much different than in former days, when they were looked upon with disrespect; a man who had no feeling for dumb animals, a heartless wretch. There can be no work more elementally benevolent than that which seeks to help those who cannot help themselves, nor recompense you for the aid you gave them. When a human being looks at the suffering of the inferior animals and with a heart full of love seeks to alleviate those sufferings, he is patterning after a true conception of the boundless munificence and love

and philanthropy of the good and great Creator of all. Such a man or woman cannot be otherwise than kind to all; for if sympathy is deep enough to reach the lower animals, surely it will include the higher, or human, as the greater sentiment includes the lesser; and what an exalted place would our profession attain if such benevolence and sympathy could be made common among us. And who dare say such a condition of things is absolutely unrealizable, when we look at the rapid progress of the humanitarian views in the last few years. Deeply imbedded in man's nature, stultified, and covered up ofttimes by lack of forethought and good judgment, lie unexplored sources of good, which may yet be developed into incalculable blessing to man in the care and love of animals. All that is needed is to sow the seeds of humanitarianism on the deep and fruitful soil, and not on the surface, to get rid of cruelty, whether expressed toward a child or animal; which is an indulgence in the lower impulses that remain as reminders of barbaric times. The cruel veterinarian does more than inflict unnecessary pain on his patient; he injures himself; the impulse that leads him to cause uncalled-for suffering to the dumb beast, is the same that raises his hand brutally against his own offspring. The progressive, kind-hearted veterinarian of to-day is fast adopting anesthesia, both general and local, in his daily practice. Professor Wooldrige said in a broad sense, the term means a suspension of sensation; whether due to disease or injury the chief object of anesthesia is abolition of pain during operation and prevention of various reflexes and muscular relaxation. We are using anesthesia not only to operate but to make a more proficient diagnosis; our clients are asking and some demanding such, their investment demands the more efficient procedure. The idea of a client objecting to the small extra expense is fast fading away, and it is a poor excuse for the veterinarian to fall back on. We all ought to advocate the abolition of pain. As the great advantage of general and local anesthesia is becoming so plain to the owner and operator, the time is not far distant when it will be compulsory and I will be one of those (and am at the present time) who advocate that

no operation involving pain should be performed without the assistance of an anesthetic or analgesic.

A great many of us should study respiratory anesthesia more generally and become proficient in its use. I am of the opinion that many of us are too timid and fear an unpleasant result. That can be overcome by experience. I do not think a veterinarian should depend on an inexperienced assistant in giving an anesthetic. Do it himself. I always do my own anesthetic work and always use the best chloroform, as that is the anesthetic we generally use, especially in horses. It takes time, I admit, and some extra expense, but, gentlemen of this honored profession, the pleasure is yours. Patient quiet and insensible to pain, client well satisfied and a legitimate way of bringing your name before the public as a humanitarian, which is the public sentiment nowadays and constantly increasing. To me the veterinarian who practices surgery without alleviating pain to a minimum, is not doing his duty to himself, his family, to the community, his college, and patient; and to my way of thinking, he ought to be the subject of censure. There is no reason under the sun why we should torture our dumb animals because we can so secure them by means of restraint; they are very sensitive to pain; why should some persist to so act? How often we read articles in our veterinary journals written by men high in the ranks of our profession advocating operating under methods that do not relieve pain and torture! This is very painful to me and others who believe, like Shakespeare, that the humane way is the best. There is just as much humanity in caring for sick animals as those who are the subject for operation, to see to it that our patient receives the proper care and sanitary surroundings, and here is where the veterinarian ought to be an educator. Instruct the caretakers to so act as to give the poor dumb creature such care as is necessary for comfort, whether the result is convalescence or death. Veterinary hospitals are now becoming a necessity in the different communities; they are equipped for emergencies and are a great blessing.

The subject of prevention is of great value from the humani-

tarian's point of view; to prevent the transmissibility of disease from one animal to another and also to the human—a subject with which the veterinarian of to-day is in constant touch, and by his judgment saves untold suffering to live stock and communities, let alone the financial side of the problem. I might mention such diseases as tuberculosis, glanders, rabies, anthrax, foot-and-mouth disease and such diseases that can be conveyed by milk, whether from the farm or elsewhere.

I believe a great field for the veterinarian to show his kind-hearted tendencies is in his obstetric work; especially now when the milch cow is assuming such a prominent place in the public eye. Where in the case of the thoroughbred her value may run up to the tens of thousands of dollars, nothing is too good for her: you are instructed to go to the limit; but do as much for the other cow if she is not so aristocratic. She can suffer as much as the other under the same conditions; the only difference is the monetary value. May be to the owner one is as valuable as the other. If you do not get quite so large a fee, if you have relieved the sufferer in a humane way, you must have a very pleasant feeling within your breast, and the cow naturally has better chances of recovery; and that very word, gentlemen, is what your success is recorded on. Successes not failures count.

One of the greatest acts of humanity that can be performed on our dumb friends, is in their destruction at the proper time; in this the veterinarian must be the judge; here his opinion is asked very frequently, and here is where he must be a student of conditions. Would it be better to destroy at once rather than to have a patient bear the pain of repair, if an invaluable animal is to be the outcome? Here again the veterinarian should educate himself to be governed by his first impression, which if this motive has been his constant thought during his professional life, it will be the most lasting and to a very great extent the most correct. Now how is this to be done? The most humane way, whatever that may be, and that will differ under different conditions. Alleviate the suffering as soon as possible with the least pain and excitement. A well-directed bullet is far better than

an anesthetic, which is very disagreeable, to my way of thinking, judging from the excitement produced; but so frequently asked by a sympathetic owner. When we are required to go to an abattoir and witness the killing of animals, I frequently have to ask that methods practiced in the large packing houses be adopted —stunning and bleeding. I am much opposed to the way some butchers operate. Cruel to the extreme. We should use our efforts to try and bring about such reforms as to minimize the terror the dumb beast has for the killing, but not aggravate it.

I believe in the formation of humane societies; their moral effect has the greatest value upon the communities. And I believe the veterinarian should be closely connected with them; he is, or should be, an adviser. Sometimes a person or body of persons can become over sympathetic, and by constant agitation try to enforce their views, when if such acts were accomplished a great amount of suffering and death would be the result. Now very often conditions exist where it is necessary to cause slight pain and inconvenience under proper conditions to animals in order to bring about a scientific result the object of which would be to prevent a great calamity, not only in the human family but animals also. Such a procedure is no more or less than a humanitarian act.

How often, especially in cities where humane societies are active, the veterinarian is called to give an expert opinion in regard to alleged cruelty. Now here is where he should have the courage of his convictions, and give an honest view of the case; he must not be at both ends and in the middle, so to speak; be for or against, friends or foes are equal, if cruelty is the point of issue. The dumb animal must be suffering or not, according to existing conditions, and who is better qualified to solve the question than the veterinarian and how often opposing attorneys will try and complicate conditions to win their point. And in some cases they are effectual; much against the cruelty involved in the case, which is regrettable, but that is one of the uncertainties of the law. And what is more retrograding than for a professional man to receive an offering to swear according to the

views of the offender, which I know has been done on different occasions. To this all I can say is, I am sorry, but I hope for his sake and his family, he will think over this act seriously, knowing that he acted unlawfully, which is no right to any one, and it ought to be the desire of any person to be a law-abiding citizen. Remember, your honor ought to be first and foremost in all cases.

A NEW SERUM SYRINGE.—A month or two ago, we received from our esteemed friend and contributor, Dr. Willis Wilson, a set of drawings prepared by his patent attorneys, of a syringe invented by the doctor which, by its construction, greatly facilitates the injection of serum, especially hog cholera serum, as well as being useful in a number of ways; such as injection of normal salt and other solutions that require great dilutions. Among the great advantages of this syringe are one's ability to inject with it any amount of serum or liquid with a small syringe with but one insertion of the needle; keeping the serum sterile; and not having to remove the serum from the original bottle or container; simply replacing the empty bottle with another full one. The syringe, which is of 20 c.c. capacity, automatically refills as often as it is discharged into the tissue or vein. Dr. Wilson has fully demonstrated the practicability of the syringe; and being himself a veterinary practitioner, we may feel safe that if it was *not* practicable he would not have gone to the expense of having it patented; and he had applied for patent at the time of his communication. We shall hope to see the instrument demonstrated at the next large veterinary gathering, so that it may find its place among the veterinary appliances on the market. In the meantime, for those who are interested, and desire a more explicit description of it than we are able to give from the drawings, we refer them to the inventor, Dr. Willis Wilson, P. O. box No. 3, Dayton, Washington.

NO USE TRYING TO KEEP UP WITH THE TIMES WITHOUT THE REVIEW: Dr. C. E. Sweiel of New Hampshire writes: "No use trying to keep up with the times without the REVIEW; kindly send it for another year."

BACTERIAL VACCINES—THEIR USE AND ABUSE.

By A. T. Ferguson, D.V.S., Evansville, Indiana.

At no time has this branch of healing been more abused, both by the profession and laymen. To-day vaccines of every description can be found and bought by any one who is willing to pay the price; and I have seen cases where it has been used with the utmost ignorance respecting effect on the animal, and some will tell you there is no harm in their administering them. I for one have seen cases where I believe they had done more injury than good.

One instance I may mention here of an animal that came under my observation that had been given a large dose, as was supposed and advertised by the vendor, to check influenza. Before this animal had been given this dose there was no sign of his being sick, and I felt he would not be attacked and had advised against giving him any. But it was administered in spite of all I could say, and a few days after, I was called in, and saw the worst case I had ever seen. So much so, that it took several weeks before the animal recovered.

His throat was not only swollen, but even the whole head and neck became involved, and at one time I despaired of saving his life. Temperature 104.2 degrees F.

I have for a long time discontinued using bacterial vaccines, made from what and where no one knows. I have noticed that in using these stock vaccines, that there is a vast difference in their effect on different animals. Some are more susceptible to them than others. In some cases there will be a dropping of the head, after an hour or so, and a loss of appetite; they refuse to eat sometimes for as long as 24 hours. In other cases the temperature will rise and the animal appears dull. I attribute these symptoms to the vaccines not being adapted to those cases, and usually I never get any good results from them; so I have discontinued their use.

When I find a suitable case and can procure sufficient pus I make an autogenous bacterin, and I have usually had some results from them.

But I am careful to observe that the animal is fit and able to stand a sufficiently large dose to do him some good from the start. I usually give 4 c.c. for the first dose, and increase it a little every time, until he has had 3 or 4 doses, which is usually sufficient. If there is no perceptible results it is about useless to continue. That has been my experience, and if all the veterinarians could make their own, there would not be quite so much rot on the market as there is. And the abuse by the horse dealers of its use might not have grown quite so extensively as it is at the present time. These men will send off and buy anything rather than pay a veterinarian for something better. And it's up to the veterinarian to give them something better than " the other fellow."

FORTY MILLION HORSES AND MULES OWNED IN WARRING NATIONS: The whole number of horses in Germany, according to the latest available statistics, at the beginning of the war was about 4,500,000, and in Austria and Hungary about 3,800,000. France had about 3,200,000 horses and 200,000 mules, the British Isles about 2,500,000 horses and Russia about 25,000,000 horses. Comparatively few of those in England, France or Germany are well adapted to cavalry work, and Russia could doubtless mount more troops acceptably than all the rest of Europe put together. When it comes to efficient horses for the artillery and the transportation service, however, the western nations possess far better horses than Russia has in any considerable numbers.

Whatever the exact situation may be when the war ends, the demand for horses will be prodigious. We know of no other farm product that can be produced with a greater profit. The only thing necessary to observe is that good horses will sell for enough more to pay well for rearing them.—(*The Horse Lover.*)

DR. F. C. DRIVER, Jasper, Indiana, has been appointed Deputy Veterinary Inspector for Du Bois County under the State Veterinary Department.

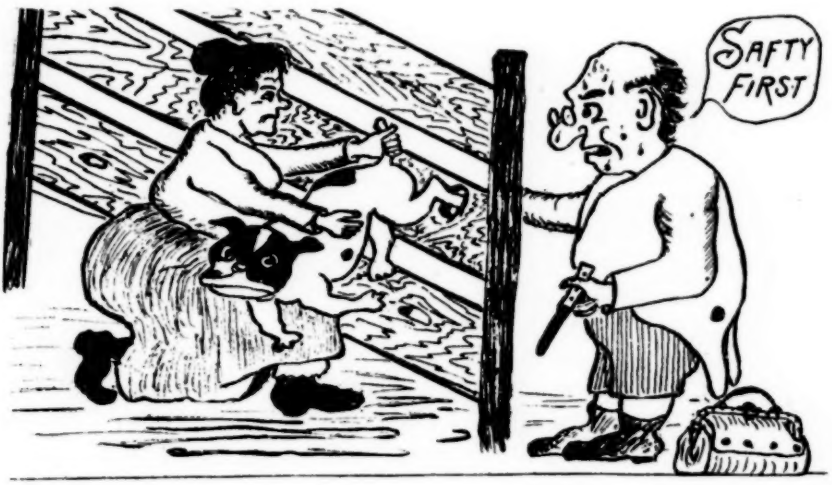
EXPEDIENT CONTROL OF FOOT OF SMALL ANIMALS FOR MINOR OPERATIONS.

By S. R. Howard, D. O. V. (Duly Ordained Veterinarian), Hillsboro, O.

You have all heard of the knot hole in father's wooden leg, well, this is the knot hole in the fence.

A small opening in board or wire fence, or lattice, I have found very advantageous when a supersensitive owner of a small nervous and snappy pet patient objects to anesthesia.

I may take the mouth, or not, but let the owner hold the animal and poke its foot through the hole.



I then pull it (the leg not the hole) well through, take a good strong hold and there you are. Safety first!

After operation is over, the owner's mind sometimes changes regarding the advisability of anesthetics.

I have tried to show my friends what a great holding company might do in exploiting this opening by first instituting a national subscription list for my whole enterprise.

These generous and devoted friends knowing my regal habits and frank delinquency, implore me to take out a patent on my discovery.

I cannot resist the temptation of grasping this epoch-making opportunity properly, so to speak, as it were.

The deep interest in my financial success shown by my dear friends indicates they appreciate the cost of my high living, and also, that they suspect I am about to declare a moratorium.

Sub rosa: As Mark Twain once said, "I am rising rapidly to poverty."

Now no one can fail to see that the assistance from the other side of the fence tends to promote equality, reciprocity and the highest efficiency which all helps business to make money.

Science acknowledges this.

You see I am fairly blasé over the certainty that my friends at last will mobilize for my benefit.

I have had a hard scramble to get along for twenty-seven years in a country practice, and now, at last confidence in my ability is established, I am about to come into my own.

(I am almost dizzy from the prospect of so much "financial stimulus.")

Ah! I can soon say with the old colored doctor, "Practizin' is very scandinavious."

Surely the Lord takes care of his own.

MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION will hold its annual meeting at St. Paul, January 13, 14 and 15, and G. Ed. Leech proclaims it "The Big Meeting of the Year," announces that Dr. Reichel of Philadelphia will be with them, and finally concludes his communication with "Live ones cordially invited." Minnesota veterinarians must certainly be conceded "live ones" from the amount and nature of the work that characterizes their annual gatherings, so we presume we cannot blame G. Ed. for excluding all but live ones in his invitation to visiting veterinarians.

REPORTS OF CASES.

TWO CASES OF INTESTINAL OBSTRUCTION.

By A. T. Ferguson, D.V.S., Evansville, Indiana.

No. 1. Some time in August I was called to see two black geldings 4 and 5 years old, and weighing about 1,200 lbs. each. These animals were suffering from an acute attack of influenza. The usual remedies were given each and both made a very nice recovery. When well, I advised the owner to get rid of them, telling him they were not suited for his work, which was hauling an ice cream wagon and making about 20 miles a day. I gave him my reasons, but the wise folk around his barn, knew better. They were put to work and in a few days I was called to see one of them at 3 a. m. suffering as they supposed, from colic. After treating this animal about an hour, I told the owner it would die; could not possibly live. I had diagnosed this as tortion of the large colon. I could plainly feel the colon doubled over on itself, and so pressed against the rectum, that it was almost impossible to make an examination. This animal was sick only four hours before the end came.

His mate was taken sick three weeks later, and I was called in the early morning to attend him. Before giving any treatment, I made an examination per rectum, and diagnosed this as a tortion, as I thought, near the stomach; although the large colon seemed to me to be in a very similar situation to that in the first case. I gave this animal every remedy I could think of to relieve him, without having the slightest effect on him. I was so surprised on making my examination per rectum, that I called in another veterinarian and explained to him how the other animal had been taken almost exactly the same way. However he could give no reason, nor much encouragement. This animal lasted about 36 hours. During that time he was tapped three times and remained standing almost the whole time, and seemed in little pain; but medicine seemed of no use whatever. When the end came I made an autopsy, and found the following conditions present:

Post-mortem Findings: Just beyond the stomach, in the duodenal trap, was a mass of undigested food, packed so hard, that

the water the animal drank 3 or 4 hours before death, was still in the stomach, which contained a large number of bots. Both colons were also packed and extremely hard and dry. The small intestines contained a very large number of long white worms. They were from 4 to 8 and 10 inches long. From all appearances the huge mass of accumulated ingesta, in the duodenal trap must have had some influence on the both colons; as the liquid could not pass out of the stomach.

In such cases, I have noticed the medicine is of little value and does not give the animal much relief.

But the peculiar point I wish to bring out here is, here are two horses, I believe from the same mare, and both put to the same kind of work, and both taken with about the same intestinal trouble.

It looks to me as if it had been handed down as a legacy from the parents. What say you?

CATARRH OF THE STOMACH IN AN AGED DOG.

By Robert W. Ellis, D.V.S., New York, N. Y.

WITH

POST-MORTEM FINDINGS.

By Crittenden Ross, D.V.M., New York, N. Y.

On September 28, 1914, an aged English Bull Terrier was brought in for treatment with the history that he had positively refused to eat any food for five days, vomited at intervals and had scant bowel movement. He was given a cathartic and put on nux and pepsin. This treatment was continued for about five days, during which time he was presented at the office for observation three times. At the visit on the fifth day, he was reported as having regained his appetite, and when brought in three days later, because of constipation, his appetite was said to be excellent. His temperature at that time was 101, and he seemed to be in a very satisfactory condition of convalescence. A high enema was given which resulted in a good bowel movement, and our patient was not seen again nor heard from for about three weeks, when we received a call, with the explanation that he had taken a bad turn, and was too weak to bring to the office. I found the dog on my arrival down, lying in the hallway outside of the rooms, too weak to get up on his feet. He was vomiting

continuously, his mouth was cold, clammy and odorous, and the body surface was also cold. The ejected matter was streaked with blood and the general outlook hopeless. I explained the gravity of the condition to my client, who, while reconciled to the fact, still wanted to go down fighting and asked me to do everything possible while there was life in the old fellow's body. He also told me that during the interval since I had last seen him, the dog had apparently made a complete recovery; had gotten strong and pulled him along on the leash as he had always done; having been before his illness a very powerful dog. That fact of course encouraged the owner, and he was anxious to make another try at it. Accordingly the dog was conveyed to the office, the stomach tube passed and the stomach washed out with a very mild chinosol solution and the dog returned to his home. The vomiting of material heavily charged with blood continued however, despite every form of medication that we could suggest, until the end, which came about 10 hours after the attack came on.

Post-mortem Findings: The stomach walls had an hæmorrhagic appearance, the mucous membrane seeming to have been removed. Inflammation had existed throughout the entire intestinal tract, less marked in the small colon and rectum. The caecum was impacted, and was the only portion of the digestive tube containing any substance of a solid nature. The heart, especially the right side, and the blood vessels leading from it, were filled with the *filiaria immitis*. The spleen showed a tumorous enlargement. The gall bladder was distended with bile, indicating that the bile had been held there and not used in digestion. The immediate death of the patient was probably due to the hæmorrhage from the stomach.

AN ILLUSTRATION OF THE VALUE OF RECTAL EXAMINATIONS IN MAKING A DIAGNOSIS.

By CHARLES THOMPSON FAKE, D.V.M., Granville, N. Y.

On November 1, 1914, I was called fifteen miles to see a five-year-old bay gelding. The owner advised me, over the phone, that although there was nothing in particular the trouble with the animal, he was in very poor condition notwithstanding his voracious appetite.

On the day I received the call I visited the farm where the animal in question was kept. During my examination of the

horse I learned from the owner that I was the third veterinarian whom he had called to see the case. My client stated that the other men had intimated bots as the cause of the trouble, and had left him some medicine which had seemed to cause a temporary improvement in the animal's condition; but that at present he was worse than at any time before.

An examination showed temperature, heart, and respiration normal. The visible mucous membranes were slightly ictherous, and an examination of the mouth disclosed the information that the animal's teeth had been recently floated. The coat was rough and had not been evenly shed.

The owner desired to have the animal well physicked. Accordingly I gave a physic ball, and left medicine for a week, asking him to advise me as to results.

I heard from him again at the end of the week, and he wanted me to make another call. This I did on the following day, and the only new symptom I noticed was an apparent difficulty in opening the jaws to chew hard substances.

I decided to make a rectal exploration, and was rewarded by finding a large tumor lying on the right side of the abdominal floor, and extending forward beyond the reach of my arm. The tumor was immovable by pressure, but palpation caused pain.

I advised destruction of the animal, and desired to make a post mortem, but the owner wished to keep him for a time, stating he would have him disposed of later.

I regret I cannot report post-mortem findings, but I trust this experience will speak in favor of rectal exploration in similar cases.

GANGRENE, OR MORTIFICATION.

By A. T. Ferguson, D.V.S., Evansville, Indiana.

Last month I was called to attend a bay gelding about 9 years old, suffering from a caulked pastern joint. The animal was extremely lame and would not place that foot to the ground. I administered tincture of iodine, and bandaged it, but the more I did the worse the animal seemed to get. I concluded then I had something serious to deal with. I changed my remedy to a good warm application of antiphlogistine, and on removing this I noticed there were a number of red blebs, and the whole of the leg from the knee to the foot was affected with moist and soapy gangrenous tissue. It had spread rapidly to the joint and involved the deeper tissue, and tendons; so quickly had this taken place

that I notified the owner that the animal should be destroyed, but he, like many others, thought it could be cured. So I was paid off, and "the other fellow" called in; and after five days of useless effort, the foot fell off, and the animal was sent to the bone yard.

Now comes the question, what caused this gangrene? In my humble opinion it was a clear case of infection from another animal which had been afflicted 18 months before and allowed to lay around in the back yard. And this animal had been allowed to do the same without any previous caution taken.

The leg was treated continually with good strong disinfectants and kept well bandaged to protect it in every possible way. I have repeatedly refused to continue the treatment, when I was satisfied the results would not be profitable to the owner, and in some cases "the other fellow" has been called in to continue the treatment; but it has in every case, turned out just as I predicted, to the sorrow of the animal and much more to the owner.

AN INTERESTING POST MORTEM OF A CASE OF GASTRIC AND INTESTINAL TYMPANY.

By CRITTENDEN ROSS, D.V.M., New York, N. Y.

Reaching a case, in company with Dr. Robert W. Ellis, too late to see the animal alive, which from the history had evidently died suddenly from a severe attack of colic, a post mortem was decided upon, which revealed the following conditions: The stomach was greatly distended by gas and the fermented mass which it contained; its walls presented the tenseness of a drum, and appeared inflamed, especially near the cardiac opening. The small intestines were also greatly distended with gas, having a diameter of about four inches, and their walls very tense. About five feet of these small intestines showed congestion and inflammatory changes; which portion was partially separated into two divisions, by a portion practically normal in appearance.

The caecum and large intestine were unaffected, and only partly filled with their normal contents. The lungs were of a very dark color, due to the blood which they contained: and the blood throughout the vessels of the body was very dark.

Conclusions: The sudden death, the presence of gastric and intestinal tympany, and the color of the blood, indicate that death was brought about by asphyxia from intra-abdominal pressure.

QUITTOR.

By A. T. Ferguson, D.V.S., Evansville, Indiana.

Here is a case of quittor, of long standing, treated for several months by a young veterinarian, seemingly without results. This was a gray gelding about 1,000 lbs. in fine condition, age about 10 or 11 years. On examining the foot, the right front, I found the animal suffering considerable pain; so much so, that he was very lame. I commenced my work by applying a stimulating lotion, which had the effect of a sweat-blister and seemed to draw it to the surface, or through the surface. This I did not consider sufficient, so I made a good-sized incision and opened it up good and deep; which caused a profuse hemorrhage, which I allowed for some time to flow freely. Then I bandaged it without any further treatment for 24 hours; after which I continued my stimulating treatment, both internally and externally. The outcome was a rapid recovery, and the total absence of lameness in three weeks. Evidently the former treatment was not sufficiently stimulating to the tissues, to the destruction of the infection, and at the same time helping the new tissue to develop itself. That's the trick in quittors.

Special Course for Licensed Veterinarians: The School of Veterinary Medicine at the University of Pennsylvania, offers a special course for licensed veterinarians extending over one week, beginning January 25, 1915. Applications should be mailed so as to reach the dean, Dr. Louis A. Klein, at 39th street and Woodland avenue, by January 18. A tuition fee of $5 will be charged for the course.

The Missouri Valley Veterinary Association will hold its annual meeting at the Coates House, in Kansas City, February 2, 3, 4, 1915. Secretary Simpson announces that the prospects are already bright for a good meeting.

The Review a Heart-Warmer: Dr. C. C. Stevens of Michigan, speaking of the Review, says: "Its pages are always full of sunshine for me."

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

PURPURA IN THE DOG [*W. G. Blackwell*].—A three-year-old fox terrier was one evening noticed bleeding from the nose. The animal was of a normal, healthy condition, and presented over the abdomen small purple patches. The temperature was 104, pulse 55. The breath was fetid and the mucous membranes of the cheeks and gums were much ulcerated. The abdomen on the right side of the penis was a purple mass. To the left of the penis there were smaller patches. Purpura was diagnosed and a treatment ordered of liq. extract ergot and tincture ferri perchloridi. The ulcers of the mouth were touched with caustics. Bleeding at the nose occurred twice the following day and the discoloration of the skin was more marked and covering larger surfaces. On the 3d day of treatment the symptoms subsided and all had disappeared on the 7th. The sores of the mouth lasted longer.—(*Veter. Record.*)

VERY LARGE VENTRAL HERNIA IN A MARE [*G. S. Thomas, M.R.C.V.S.*].—Fifteen or sixteen-year-old bay carriage mare had a very large ventral hernia, which appeared at the time she was advanced in pregnancy. Notwithstanding her condition, she foaled down all right with a great deal of pain during the act of parturition. The foal lived but fifteen days, and the mare was destroyed after. At the post mortem, the abdominal muscles were found merging indistinguishably into the skin. The case was quite inoperable.—(*Veter. Journal.*)

CESARIAN SECTION IN A MARE [*M.R.C.V.S.*].—Hackney mare had tetanus and she was within a week of parturition. The foal was of valuable pedigree and ought to be saved at the risk of the dam. She was chloroformed, and when fully under the influence, an incision was made in the middle of the abdomen. The mare being afterwards put to death with more chloroform. The foal lived for a fortnight and died from an ailment, which

was entirely independent of the manner it was brought into the world.—(*Veter. Journal.*)

ENORMOUS LIVER IN A HORSE [*Capt. A. J. Williams, F.R.C.V.S., A.V.C.*].—The illustration of a liver found at the post mortem of a country-bred gelding, seven years old, which never had anything wrong before. He became sick and was treated for anaemia and debility, for 263 days out of the two last years, when he was ultimately destroyed. The autopsy revealed a condition simulating generalized tuberculosis of the lungs, liver, kidneys, intestines, bladder and pancreas. The liver weighed ***ninety pounds*** and was cirrhotic and calcareous throughout.—(*Ibidem.*)

OMENTAL HERNIA OF THE LEFT FLANK IN A DOG [*J. F. D. Tutt, M.R.C.V.S.*].—This condition is rare in dogs. It occurred in an Aberdeen terrier, which had a swelling situated high up in the left flank for some time. The swelling was fairly hard and no opening into the abdomen could be detected, to make a positive diagnosis. The dog was anesthesied, after disinfection, an incision was made over the swelling. There escaped a certain quantity of urine-colored fluid, and on dissecting the edges of the wound, it was seen that the swelling was due to the omentum being adherent to the flank wall, through a small opening. Adhesions were broken down, the omentum reduced, the opening sutured and the wound closed in the usual way. Recovery followed.—(*Ibidem.*)

POLYCYSTIC KIDNEY IN A BUFFALO [*H. C. Ganguly, Bengal Veterinary College*].—Though not uncommon in human beings, cystic degeneration of the kidneys is rather rare in lower animals.

This was found in making the autopsy of a buffalo that died with rinderpest. All the lesions of cattle plague were found and besides them, a largely hypertrophied left kidney. It was nodular in shape and on section exhibited multiple cysts of varying sizes, situated between the cortex and its pyramids. The sacs were filled with thin yellowish fluid and well isolated from one another by septum of greyish white interstitial tissue, compressed renal parenchyma in some of them.

The animal was old, had no cystic or dropsical affection of any other organ and his renal ailment remained unsuspected during his whole life.—(*Veter. Record.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

NAIL IN THE FOOT AND LAMINITIS [*Mr. Beauvillain*].—Complications following punctured wounds of the foot are not rare. They often give rise to toxi-infections, and laminitis is one amongst them as shown by the following case.

A mare, nine years old, is lame on three legs by a punctured wound, made by a nail, which has entered near the toe of the right fore foot, at even distance from the wall to the point of the frog. After disinfection, an antiseptic dressing is applied. Four days after, the leg is swollen and the horse is very lame. The wound made by the nail, has a bad appearance, the discharge is greyish and sanious. Probing reaches a piece of necrosis of the third phalanx. The opening of the fistula is enlarged, the bone curetted and after application of tincture of iodine, an antiseptic dressing is put on. Notwithstanding this interference, the case grew worse. The leg is much swollen, way up to the elbow and fluctuation being detected at the carpal sheath, a puncture was made, which gave escape to a small quantity of bloody pus. After a few days slight improvement takes place as far as the swelling of the leg goes. But the general condition is bad. The animal is threatened with toxi-infection. He moves with difficulty and the right fore foot is very warm. The mare is put in slings and irrigations prescribed for both legs. After a few days, the mare is taken out of the slings and walked. Her gait is characteristic. The right fore leg rests on the ground, with hesitation, the heels being put down first, the hind legs being carried well under the body. It is the gait of laminitis. The sole of the right fore foot has dropped down and is bulging from the toe to the point of the frog. Subsequent treatment of this foot and proper shoeing permitted the mare to resume some amount of work.—(*Journ. de Zootchn.*)

PANCREATIC EPITHELIAL AND INTESTINAL CONJUNCTIVE CANCER IN A DOG [*Prof. Dr. V. Ball*].—It is not common to observe in one animal, the coexistence of a malignant tumor with that of a benign neoplasm; but it is altogether exceptional, to meet in the same subject two cancers of histologically different natures. Such was the case in the black poodle of nine years old, recorded here.

He was in cachetic condition. The loss of flesh began to be noticed some three months previous. It came on rapidly but

progressively, and yet the appetite was fair and even at times exaggerated. Since three months the feces have been diarrheic, clay-like, " looking as dirty milk," says the owner. Considering the condition of cachexia of the dog and the character of the feces, cancer of the pancreas was diagnosed; although the presence of glycosuria was found absent by chemical analysis of the urine.

The animal was destroyed. The diagnosis being confirmed by the detection of small neoplasmic grey-whitish nodules, varying in size from that of a pea to that of a hazel-nut. They were found in the body, the head and the tail of the pancreas. But besides this, there was found, close to the pylorus, a round and slightly flattened mass, which on incision of the intestine, proved to be a cupuliform tumor, made of grey rosy translucid tissue. In the omentum, there were hypertrophied and diseased lymph glands. In the lungs, spleen and kidneys were also metastatic lesions of the same nature.

The dog had also chronic mitral and tricuspid endocarditis. The pancreatic tumor was a metatypic glandular epithelioma. The intestinal sarcoma with large round cells.—(*Ibidem.*)

Arterial Digital Ligature in Phalangeal Osteitis [*Profs. Lasserre and Lesbouyries*].—The three following observations may be considered as contributions to the history and applications of the operation recommended since 1912 by Prof. Joly of Saumur.

1. *Congestion of the Left Anterior Foot.* A half Anglo-Norman horse, when five years old, had the left fore foot bruised in some way by the wheel of a wagon. He showed only slight limping, which subsided after few tepid water baths. Some weeks after, he became lame again on the same foot. Treated in the same way, he again got over his trouble and resumed work. But a third time he is disabled. Then he is very lame. Percussion on the foot, pinching with nippers do not reveal any soreness or pain. The foot is normal, with the cartilages soft and elastic; but it is very warm, much more so than the other.

Ligature of the digital artery seems indicated. It is performed. The heat of the foot did not diminish until the fourth day. The lameness gradually subsided and the horse was soon considered as cured. Some short time after, before being returned to his ordinary work, he is exercised and soon the lameness returned, increased and required plantar neurectomy first, and afterwards median to relieve him entirely.

2. *Phalangeal Osteitis of the Right Fore.*—This horse has cartilaginous calcification of the right fore foot. He became lame on both fore legs. The lameness is increased when the animal is moved on the pavement. Both cartilages are ossified. No improvement is obtained by simple local treatment and digital ligature is performed. After one month, recovery seems complete. The horse resumes work and performs it for several months when the lameness returned as severe as before. The horse was sold.

3. *Phalangeal Osteitis of the Right Fore.*—Anglo-Norman mare after some days of moderate work becomes slightly lame on the right fore leg, principally on the pavement. Close examination reveals nothing abnormal. After a few days however, the trouble is more marked, there is more lameness, heat round the coronet and also at the heels, which are somewhat tender. Injection of cocaine confirms the suspicion of the lameness being located in the foot. Arterial ligature is finally performed. After cicatrization of the wounds of operation, the lameness is still present, less marked however; it gradually subsides so that the mare resumed work. Later however, the same lameness returned as was the case in the first observation.—(*Revue Veter.*)

A Case of Encephalo-Myelitis in a Horse [*C. Lesbre*].—After one day's work, a horse is taken suddenly ill. Covered with perspiration, he scrapes the ground, with his feet, has febrile chills and muscular twitchings. The temperature rises to 39.3 degrees, the head is hot, eyes half closed, right pupil contracted, while the left is dilated. The penis is cold, flabby and hanging down, the anus is open. Though there is not truly paraplegia, there is a certain incoordination in the hind legs. Successively used, diffusible stimulants, purgatives, ice bags on the head, injections of cafeined serum, bring no change in the first two days of the treatment. Then the temperature goes down, the appetite improves, locomotion is easier, defecation and micturation become normal. The general symptoms continue to improve. Gradually the temperature returned to normal, the anal and rectal paralysis disappeared, and the penis is drawn back in the sheath. As the head is still very warm, ice is kept up. Some twenty days after the onset of the disease, the local and general symptoms have entirely disappeared and there remains but a loss of energy and the nutrition was delicate. The author thinks that it was a case of intoxication by the hay used as ration to the animal.—(*Soc. Scient. Veter. de Lyon* and *Revue Generale.*)

CORRESPONDENCE.

FOOT AND MOUTH DISEASE.

Urbana, Ohio, December 5, 1914.

Editors AMERICAN VETERINARY REVIEW, *New York:*

GENTLEMEN—Please find picture of a herd of cattle and hogs, that was found infected with foot and mouth disease.

This herd was found by Drs. Albert Buck and D. F. Bowen in northern part of Champaign Co., Ohio, on the farm of W. W. Wilson. The dimensions of the pit are: 54 feet long, 8 feet wide and 8 feet deep. And there were 49 steers, 4 milch cows and 90 head of hogs buried in it by the Federal and State authorities. The date of the finding was November 13, 1914.

Yours respectfully,

BUCK & BOWEN:
ALBERT BUCK.

BIBLIOGRAPHY.

ANIMAL CASTRATION.

ANIMAL CASTRATION—A BOOK FOR THE USE OF STUDENTS AND PRACTITIONERS, by George R. White, M.D., D.V.S., graduate Columbian University (Veterinary Department), member American Veterinary Medical Association, Tennessee Veterinary Medical Association, American Medical Association, Tennessee Medical Association, Nashville Academy of Medicine, Davidson County Medical Society, Tennessee Academy of Science, United States Live Stock Sanitary Association, etc.; professor of Veterinary Medicine, Knapp School of Country Life, Teacher of Surgical Restraint, Castration and Spaying, Chicago Veterinary College, Terre Haute Veterinary College, Indiana Veterinary College, and Alabama Polytechnic Institute (Veterinary Department). Author of Restraint of Domestic Animals, etc., 240 pages, with over 200 half-tone illustrations from original photographs. Nashville, Tennessee. Published by the author, 1914.

During Christmas week, amongst the many interesting packages that found their way to our desk, was one containing the excellent work on *Animal Castration* by Dr. George R. White. From a man of Dr. White's experience and untiring energy as an operator for more than a score of years, one might anticipate a work of considerable volume and completeness on this practical subject, in the practice of which he has devoted a full share of his time; yet few there are, who will be prepared for the extensive work that he has compiled. With his usual straightforward manner of expression, so easy to the person who is master of his subject, the author explains in a lucid yet brief manner, each step in the operation of castration in each class of animal separately; his excellent illustrations demonstrating clearly, the methods of restraint, instruments to be used, the organs to be removed, normal conditions and complications. And while making very clear the dangers to operator and animal through insecurity of restraint, he admonishes the operator to confine the animal in as humane a manner as possible, never to take advantage of an animal when confined, or inflict any unnecessary pain, and to use general anaesthesia wherever possible.

Part I. of this work contains eleven chapters as follows: *Castration of the Stallion; Castration of the Colt; Castration of the Mule; Complications Encountered in Castrating—viz.: Inguinal Hernia, Scrotal Hernia, Cryptorchid, Monorchid, Orchitis and Hermaphrodite; Sequelae of Castration—viz.: Septic Infec-*

tion, Tetanus, Prolapse of the Intestine, Azoturia, Hemorrhage, Oedema of Sheath, Schirrous Cord, Exuberant Granulations, and Hydrocele; Castration of the Bull; Castration of the Boar; Castration of the Ram; Castration of the Dog; Castration of the Cat; Caponizing. Part II. contains eight chapters: *Mare Spaying; Cow, Heifer and Calf Spaying; Sow Spaying; Sheep Spaying; Bitch Spaying; Cat Spaying; Poulardizing; Deodorizing the Skunk.* The technique of each of the foregoing operations is individually explained and clearly demonstrated by cuts made from the author's own subjects, together with all the instruments and controlling apparatus. Nothing is left to the imagination. It is of course impossible to do justice to a work that is the accumulation of knowledge of twenty years in the field of veterinary practice, in a short review of this kind—we cannot do more than suggest some of its qualifications, as it would require long and critical study of the book to appreciate its full value. But even in our superficial perusal of it we have been impressed with its completeness; not alone in the treatment of the subjects under discussion, but with the superior quality of the paper, the large, clear-cut type, and the distinctness of the illustrations. In short, *White's Animal Castration* is an essential to every practitioner and to every student of veterinary surgery; and is destined to become the adopted text-book on the subject, in all American veterinary colleges. The book is handsomely bound in light blue, with gold lettering on the front cover as well as the usual lettering on the back; making a very pretty volume for an office table.

BOTANY.

OUTLINES OF LECTURES ON BOTANY PREPARATORY TO VETERINARY MEDICAL STUDIES: Especially as an Introduction to Veterinary Materia Medica, Pathology, Toxicology and the Feeds and Feeding of Animals, by D. Arthur Hughes, Litt. M., Ph.D., D.V.M., professor of Dairy Inspection, Milk Hygiene and Medical Botany in the Chicago Veterinary College. Chicago: Published by the Author, 1914.

This little work by Professor Hughes is dedicated to beginners in veterinary medical studies in the hope that its pages may help to secure information on the relation of the composition of plants and the products of plants, to animal growth, the diseases of animals, and their medical treatment. It is divided into eighteen lectures and a review. Lecture I—*The Plant Cell, Composition, Contents;* Lecture II—*Protoplasm and Its Environment;* Lecture III—*Growth of Plants;* Lecture IV—*Plant Absorption*

—*Liquids;* Lecture V—*Root Absorption;* Lecture VI—*Transfer of Water in Plants;* Lecture VII—*Transpiration;* Lecture VIII—*Plants and Soils;* Lecture IX—*Ash Constituents of Plants;* Lecture X—*Assimilation;* Lecture XI—*Nitrogen Appropriation by Plants;* Lecture XII—*Nitrogen-Free Plant Products;* Lecture XIII—*Nitrogenous Plant Products;* Lecture XIV—*Plants and Veterinary Materia Medica;* Lecture XV—*Plants and Animal Nutrition;* Lecture XVI—*Plants and Veterinary Toxicology;* Lecture XVII—*Economic Lecture on Cotton;* Lecture XVIII—*Remarks on Botanical Studies.* Botany has never been an attractive subject to the average veterinary student, but the preparatory study as arranged by Prof. Hughes has the effect of directly connecting in the student's mind, botany with veterinary medicine-food products, and the relation of plants to drugs, and arousing in him a curiosity and an interest to further explore, what he finds after all to be an attractive field. It does that because it has cleared up in those eighteen lectures many hazy points in the student's mind, and prepared him for a thorough and comprehensive study of the deeper ramifications of the subject as he advances from year to year in his other studies. That is the object of the book, and if our impression of it is the correct one, it has accomplished that for which its author compiled it. That our impressions *are* correct, we believe to be certain, because the perusal of the work aroused in us a hitherto dormant interest in that important line of study. It should be adopted by every veterinary college and placed in the hand of every freshman.

A TEXT-BOOK OF GENERAL BACTERIOLOGY.

(Fourth Edition Thoroughly Revised.)

A TEXT-BOOK OF GENERAL BACTERIOLOGY. By Edwin O. Jordan, Ph.D., Professor of Bacteriology, in the University of Chicago and in Rush Medical College. Fourth edition thoroughly revised. Octavo of 647 pages, fully illustrated. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, $3 net.

This work, the compilation of a teacher of the subject, naturally is complete in all the essentials of the subject, while purged of all the unnecessary details. Nevertheless it requires 36 chapters to cover the subject from the author's viewpoint. A new chapter has been added to this fourth edition on the filterable viruses, bringing it right up to the present in the studies of bacteriology. Students will find Prof. Jordan's works interesting

and easy of comprehension, and old practitioners who finished their college work before bacteriology occupied a place in the course of studies, will find reading it a profitable pastime. In short, *Jordan's Text-Book of General Bacteriology* fully covers the fundamental principles and methods of laboratory work and is therefore an essential alike to the earnest student and progressive practitioner. Bound in cloth of dark green with gold lettering, and printed in sharp type on an excellent smooth paper, its illustrations standing out clear and distinct, it is a credit to the publishers.

PROCEEDINGS OF THE AMERICAN ASSOCIATION OF PHARMACEUTICAL CHEMISTS—SEVENTH ANNUAL MEETING.

PROCEEDINGS OF THE AMERICAN ASSOCIATION OF PHARMACEUTICAL CHEMISTS —SEVENTH ANNUAL MEETING. Held at the Hotel Somerset, Boston, Massachusetts, May 25 to 30, 1914.

The published proceedings of the seventh annual meeting of the American Association of Pharmaceutical Chemists is tangible evidence of the progressiveness of the firms that comprise its membership. We find the names of eighty-five firms, representing fourteen states. The proceedings of this seventh annual meeting make a very creditable volume of more than 300 pages, devoted to papers and talks, the object of which is the binding together of the manufacturing pharmaceutists on the principles of standardization and purity; all of which makes for better therapeutic results, and is therefore of vital importance and interest to the practitioner.

TWIN CITY VETERINARY MEDICAL ASSOCIATION: This association began activities this winter by a meeting at the Merchants Hotel, St. Paul, November 24, 1914. The excellent program sent out by the secretary, Prof. M. H. Reynolds, was surmounted by some excellent cartoons, one of which was representative of our esteemed friend, G. Ed. Leech, standing on a bridge, spanning the Mississippi, demanding to be shown " the papers " from a cow that is approaching the bridge from the Wisconsin side. Another is that of Dr. Weaver, to whom a porker is pleading for " some serum." The artist's work must have caught the vein of the members, as the meeting was a great success.

OBITUARY.

FRED SAUNDERS, D.V.S.

Dr. Fred Saunders died at Salem, Massachusetts, on December 19, 1914. He was graduated from the American Veterinary College with the class of 1882, and for a year thereafter officiated as house surgeon to the American Veterinary Hospital, under Professor Liautard. After that for the first few years of his professional life, he practised in the cities of Lynn and Salem, Massachusetts; finally succeeding to the practice of his father, Dr. Robert W. Saunders, an old-time veterinarian, and one of those referred to by Dr. Liautard in his address to the Fiftieth Anniversary Meeting of the American Veterinary Medical Association in New York City in September, 1913, as being present at the Astor House on June 9, 1863; and therefore a charter member of the U. S. V. M. A. Dr. Fred Saunders for the last few years of his life had been connected with the meat inspection service of the United States Bureau of Animal Industry, stationed at Somerville, Mass.; and quite recently, had been engaged in the work on the eradication of the present epidemic of foot and mouth disease. His death was due to acute Bright's disease, and his illness was of very short duration. He was at work as late as December 12, and died on the morning of the 19th. Those who were in attendance at the old A. V. C. during the time of his connection there, have very pleasant remembrances of his constant good nature, congeniality and professional courtesy. He leaves a widow, and one son of adult age.

EDWARD WOODYEAR MUMMA, V.M.D.

Dr. Edward Woodyear Mumma died at Henderson, Kentucky, on December 5, 1914, following an attack of typhoid fever. At the time of his death, Dr. Mumma was temporarily located at Henderson, Ky., co-operating with the federal veterinarians in the eradication of foot and mouth disease. He was

Associate in Animal Pathology, at the Kentucky Agricultural Experiment Station, at Lexington.

Dr. Mumma was born at Bendersville, Pa., November 10, 1890. His father, Dr. Richard T. Mumma, was a practicing veterinarian in York County, Pennsylvania, for over a quarter of a century.

Dr. Mumma graduated from the Veterinary Department of the University of Pennsylvania, class of 1912. For a short time following graduation he held a position as bacteriologist in the Veterinary Department of the H. K. Mulford Company Laboratories, at Glenolden, Pa. From there he went to Kentucky.

Dr. Mumma was a member of the American Veterinary Medical Association and the Alpha Psi Fraternity.—H. P. H.

Dr. F. W. O'Brien, 50 years old, a veterinary surgeon, and three times mayor of Hannibal, Mo., was killed while cranking his motor car. The crank struck him on the head.—(Wichita, Kans., *Eagle.*)

Dr. James T. McAnulty Dead.—Dr. James T. McAnulty, ex-member of the Live Stock Sanitary Board of Pennsylvania, a practising veterinarian and a blacksmith, died Sunday afternoon at his home, 1447 South Eighth street, from pneumonia. He was stricken with a severe cold last Sunday. Doctor McAnulty was 62 years old. He had an office in this city and Cape May, N. J.

Doctor McAnulty was graduated from the University of Pennsylvania in 1888. He assisted in eradicating the epidemic among cattle in Pennsylvania 20 years ago. Forty years ago he established a blacksmith shop near his home and conducted it until his death.

He was a member of the Philadelphia Council, Knights of Columbus, the Keystone Veterinary Medical Association, the Pennsylvania State Veterinary Medical Association and master of the Horseshoers' Protective Association of America. He is survived by his widow, a daughter, Miss Margaret K., and two sons, James T., Jr., and Dr. Charles J. McAnulty.—(Philadelphia *Ledger.*)

SOCIETY MEETINGS.

MASSACHUSETTS VETERINARY ASSOCIATION.

The regular meeting of the Massachusetts Veterinary Association was held at the New American House, Boston, on Wednesday evening, October 28, at 5 p. m., 1914. Forty-two members and guests were present. Previous to which and through the courtesy of Dr. French, superintendent, and Mr. Mayo, farm superintendent, the members of the association and their guests were invited to visit the farm of the Medfield State Hospital, at Medfield, Mass., where a practical demonstration of the simultaneous method of treating hog cholera was given by Dr. E. A. Cahill of the Massachusetts department of animal industry, assisted by Dr. Warren L. Thayer of Worcester, Mass., after which Supt. Mayo escorted the company through the spacious dairy and stables, and at 4.30 the party commenced the return trip direct to the New American House, where President Seale called the members together at 6.10 p. m. for the regular monthly meeting. After the Secretary had read the records of the previous meetings and the same were approved, the president introduced Dr. Cahill, who read a paper on the subject of hog cholera and method of control, at the conclusion of which the Doctor invited discussion, which was freely participated in by the majority present. At this juncture Dr. Burr made a motion which was seconded by Dr. Peirce and unanimously carried that a standing vote of thanks be extended to Dr. Cahill for the demonstration and his valuable contribution, a transcript of which will be published in the AMERICAN VETERINARY REVIEW for the benefit of members who were absent. A standing vote of thanks was also extended to Dr. French and Mr. Mayo through whose courtesy the farm of the Medfield State Hospital was placed at the option of this Association. Dr. Peirce then reported the serious illness of Dr. Howard and on motion by Dr. Abele, seconded by Dr. Peirce, it was made a unanimous vote that the President appoint a committee to formulate and send to Dr. Howard a letter of sympathy. The appointees were Drs. Peirce, Babbitt and Pugh. There being no further business, the meeting adjourned, at 8 p. m.

W. T. PUGH, Secretary.

NEWS AND ITEMS.

THE VETERINARY ALUMNI QUARTERLY OF OHIO STATE UNIVERSITY was received just as we were closing our forms, and looks like a good number.

DR. GORE DEAD.—Dr. George H. Gore, Massillon, Ohio, died about the middle of October last, after practising in that place for over 40 years.

OHIO STATE VETERINARY MEDICAL ASSOCIATION.—The annual meeting of this excellent State organization will be held at the State University, Columbus, January 6 and 7, 1915.

WOMAN DIES OF ANTHRAX—ILL TWO DAYS.—Miss Isabella Agnes McFadden, 33 years old, died in Philadelphia in November last of anthrax. The first woman victim in the history of the coroner's office.

DR. BURKLAND GOES SOUTH: Dr. H. W. Burkland, formerly of Jefferson, Ohio, has accepted the position of Assistant State Veterinarian of Georgia, and has been in Atlanta since October 15, 1914.

DR. LANDES DEAD.—Dr. Edgar H. Landes, fifty years old, a practising veterinarian and former coroner of Camden, N. J., died recently of tuberculosis. Dr. Landes was a graduate of the University of Pennsylvania.

THE CHAIR OF SURGERY OF THE CINCINNATI VETERINARY COLLEGE is being filled during the present session by Dr. James A. Waugh, of Pittsburgh, Pa.; the doctor's practice in Pittsburgh, meanwhile being covered by an assistant.

DR. CAHILL MARRIED: Dr. Edward P. Teague, Lowell, Mass., announces the marriage of his sister, Margaret Annabel, on December 26, 1914, to Dr. Edward A. Cahill. The REVIEW congratulates the young couple and wishes them great happiness.

DR. J. ELMER RYDER CONVALESCING: The many friends of Dr. Ryder of New York City, will be pleased to know that he is getting better of the tedious illness he has been suffering from for some months. His family report him asking for his REVIEWS, which he has not read for a few months.

DR. HOWARD CONVALESCENT: Those of the friends of Dr. L. H. Howard, of Boston, Mass., who have heard of his recent serious illness, will be glad to learn of his safe convalescence. The REVIEW in expressing a wish for the speedy return of his strength, voices the sentiment of the whole profession.

DR. HOAGLAND MARRIED.—We read in the Chillicothe, Mo., *Tribune* of the marriage on November 25, 1914, of Dr. A. L. Hoagland, of Ottumwa, Iowa, to Miss Grace Druen, until recently a resident of Chillicothe, but at the time of her marriage residing with her parents in Ottumwa. We wish them joy and happiness.

CANADIAN VETERINARIAN WITH MILITARY RANK: Col. W. J. Neill is Director General of Veterinary Services in the Canadian Militia. He went with the first Canadian expeditionary force and is Assistant Director of Veterinary Services on the staff of General Alderson where the Canadians are camped on Salisbury Plains in England.

VETERINARY SCIENCE AND PROGRESSING AGRICULTURE is the title of an article in *The Southern Farmer*, from the pen of Dr. W. H. Dalrymple; the article having been written in anticipation of the A. V. M. A. going to New Orleans in December, but published after the vote decided the postponement, as shown by an *Editor's Note*. A frontispiece of the officers accompanies it.

CALLS FROM PROMINENT VETERINARIANS: During Christmas week we were honored by calls—on separate occasions—from Dr. John F. Winchester, veteran veterinary practitioner, of Lawrence, Mass., and Dr. Chas. H. Higgins, Pathologist, Health of Animals Branch of the Canadian Department of Agriculture, Ottawa.

Forty-seven carloads of horses were shipped from the National Stock Yards at East St. Louis, recently, to Canada, whence, presumably, they will be shipped to the British army. Ninety carloads went previously for Newport News, Va.—(Wichita, Kan., *Eagle.*)

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY: This organization will hold its annual meeting in Trenton, on Thursday, January 14, 1915. The president and secretary in behalf of its members want it understood that the usual welcome awaits any and all veterinarians from neighboring states who may feel disposed to look in on them during their deliberations.

WOULD STANDARDIZE VETERINARY COURSE.—Four years instead of three, and regular college requirements for admission, are the changes that will be adopted by the College of Veterinary Medicine at Ohio State University after this year, according to the vote of the faculty of the college. The trustees of the university have the final action to make the changes take place. Ohio State and Michigan are now the only two schools east of the Mississippi that permits students to enter this course without high school credits.—(Columbus, O., *Citizen.*)

HUMAN VULTURES.—Vultures in human form seem ever ready and waiting to swoop down upon their victims at the first opportunity. When the so-called *Horse Sickness* broke out in the Middle West two years ago, these vultures in the form of quack remedy venders began to fleece the horse owners by selling them " sure cures " that were absolutely worthless; and the same class of sharks are now endeavoring to fleece the cattle owners by representing themselves as in possession of a sure cure for foot and mouth disease. It is to be hoped that the authorities get these frauds and show them no mercy.

VETERINARIANS PRESENT GIFT TO DR. GEORGE W. DUNPHY.—Dr. George W. Dunphy, of Lansing, State veterinarian, was the guest of honor at a banquet given by the State Veterinary Medical Association at the Hotel Tuller Saturday night.

Dr. Hutton was toastmaster, and toasts were responded to by Dr. Haladay, president of the association; Dr. Harper, secretary; Dr. Black, Dr. Lyman, Dr. Giltner, Dr. Brenton, Dr. Gibson, Dr. Krey, Dr. Wilson, Dr. Cummings, Dr. James J. Joy, live stock commissioner, and Dr. Hallman.

Dr. Dunphy was presented a handsome gift by the association, Dr. J. Hawkins making the presentation speech.—(Detroit, Mich., *Journal.*)

SERIOUS DISEASE AFFECTING SHEEP.—The department of agriculture has undertaken the investigation of a serious disease which is affecting the Rocky Mountain bighorn sheep and the mountain goats, and is reported as existing on the Lemhi national forest in Idaho. The forest officers think that it is the same disease that caused the mountain sheep to die in great numbers during 1882-3. The nature of the disease is not known, though it results fatally and sheep affected with it seem to have rough and mangy coats and are very much emaciated. Three bureaus of the department are engaged in the study—the Biological Survey, Bureau of Animal Industry, and the Forest Service. A competent veterinarian has already gone to Idaho to start the work.—(A Keokuk, Iowa, Daily.)

VETERINARIANS MEET WITH FARM CONGRESS.—Dr. C. A. McKim returned from Lincoln and Omaha Friday. At Lincoln he attended a meeting of the Nebraska Veterinary Medical Association. There were about 125 veterinarians present and it was a very profitable and enthusiastic meeting.

Wednesday noon the veterinarians were the guests of the Lincoln Commercial Club at luncheon in their beautiful new building, of which they have reason to be proud.

The Farmers' Congress, in session at Omaha, sent an invitation to send a delegation to meet with them. Dr. McKim was one of the ten veterinarians selected to attend on Thursday. It is hoped that much mutual benefit may be secured from a closer relationship of these two associations.—(Norfolk, Neb., *News.*)

HONOR DESERVED: A well-deserved honor was conferred last night, when the chamber of commerce elected Dr. W. H. Dalrymple honorary vice-president.

Dr. Dalrymple has been a power for good in Baton Rouge and for material development along correct and lasting lines.

While East Baton Rouge has reaped much of the benefit from his labors, his work has not been confined to any locality. He has striven for the good of the state, and there are few sections of Louisiana that are not better off because of his efforts.

We, here in East Baton Rouge, have not reaped the benefit that we should from the work of such men as Dr. Dalrymple and Dr. Dodson, and their staff at the state university experiment station.

There is a vast store house of knowledge at the experiment station that the farmers should tap. They and the territory in which they live would be better off if they made use of this knowledge.

Dr. Dalrymple has served Louisiana and especially Baton Rouge unselfishly and faithfully and he deserves the honors given.—(Baton Rouge *State Times.*)

THE LIFE OF HORSES ON THE FIRING LINE: That the average life of a horse on the firing line in France is about ten days was the astonishing declaration of a British army officer identified with the remount department. Horsemen were prepared to hear of unexampled wastage after reading about the havoc wrought by modern artillery and machine guns, but this report indicates such slaughter as had not been dreamed of in this country.

In the Civil War in this country the wastage of horses was at the rate of about 500 a day in the Union army, and the service of a cavalry horse under an active commander then averaged about four months. During his Shenandoah Valley campaign Sheridan required 150 fresh horses a day, and in eight months the cavalry of the Army of the Potomac was remounted twice, nearly 40,000 horses having been required.

If the British officer's estimate of the wastage is not wide of the mark, it is a foregone conclusion that before the carnage ends there will be such a shortage of horses as Europe has never seen. As most of the animals now in the field were commandeered from farmers and others who had been using them in agriculture and industry, they will have to be replaced for this work when peace is restored, and this demand, added to that of the war, will, it is believed, seriously affect the price of horses the world over during the next few years.—(*The Horse Lover.*)

HORSESHOEING VERSUS EFFICIENCY is the title of an article in the *Rider and Driver* of December 5, 1914, by *Bohemian,* in which its author displays a knowledge on the subject of shoeing horse's feet to meet the conditions of the diabolical asphalt pavement, that does not belong to an amateur. He tempers his excellent arguments, too, to meet the modern mind, that has lost a great deal of its *common* sense and is suffering from machine mania, and uses the automobile as an example. He compares the efficiency of an automobile or an auto truck, with steel tires on either vehicle, to those with rubber tires, on the polished surface of the average asphalt street, and applies the same argument to the horse's feet. There can be but one answer. For efficiency the horse's foot *must* be shod with rubber, and the greater the amount of rubber contact, the greater the efficiency of the horse. So that, while rubber horseshoe pads used with three-quarter steel shoes, are greatly superior to an entirely steel contact surface, a shoe that has a rubber contact over its entire surface is again far superior to the rubber pad. This latter system of shoeing the horse's foot, is in fact, the nearest to the perfection of a non-slipping shoe that has yet been devised. Rubber automobile tires slip on the asphalt under certain conditions, and so will the rubber horseshoe under the same conditions, but we are convinced by *Bohemian's* arguments and by experience, that the horseshoe with the rubber contact surface equips the horse with the greatest degree of efficiency. Veterinarians should give this subject careful study, as it is of vital importance to their clients and to themselves.

SECRETARY WALKLEY HAS AGAIN BEEN SIGNALLY HONORED by being again selected by the National Executive Committee of the Ass'n of B. A. I. Employees, to act as Legislative Representative at Washington during the present session of Congress, to promote the interests of the Lobeck-Lewis Bill, H. R. 9292-S5720. He deeply appreciates the continued confidence of the Executive Committee as manifested by this appointment and hopes to arrange to proceed to Washington, during the early part of January, 1915. In the meantime he is keeping in the closest possible touch with Representative Lobeck and Senator Lewis, regarding the Classification Bill. Representative Lobeck, when interviewed by Secretary Walkley in Chicago, on Sunday, December 6, urged upon the Bureau employees, the importance of publicity and unanimity of action in boosting the

Lobeck-Lewis Bill. He was glad to learn that the organization would endeavor to obtain endorsement of the Bill from Women's Leagues, City Councils, Boards of Health and other civic bodies, associations or societies, and gave the assurance that these endorsements would be of untold benefit in aiding in the passage of the Bill.

All local Secretaries of the National Ass'n of B. A. I. Employees are urged to keep a complete file of the official organ, *The Inspector;* as many official notices or announcements, including the official calls for per capita tax that have in the past been issued by this office in the form of circular letters, will in future appear in the official organ, under "*Secretary's Notes.*"

MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION.—Program of eighteenth annual meeting, St. Paul, Minnesota, January 13th, 14th; Minneapolis, Minnesota, January 15, 1915; headquarters at the Merchants Hotel.

Wednesday, January 13, 1915, 10 a. m., meeting: Board of Directors. Following the business session, a paper entitled My Trip Abroad, by Drs. S. H. Ward and M. H. Reynolds. Adjournment until 7.30 p. m., when, through the courtesy of E. V. Clark, manager, the H. K. Mulford Co. will give a banquet, stereoptican and moving pictures at "The Camel's Club," 43 S. 4th street, Minneapolis. Talk given by H. F. Palmer; also, My Country, by S. S. Whitbeck. The following papers are to be presented on Thursday, January 14, 1915: *Practice Act,* Dr. E. T. Phelps; *Rheumatism,* Dr. C. A. Nelson; paper, title not given, Dr. P. Casey; *Veterinary Service in the Far East,* Dr. D. Palmer; *The Veterinarian from the Farmer's Viewpoint,* Dr. F. W. Law; "*Relation of the Internal Secretion of Thyroids to Thyroid Hyperplasia,*" Dr. C. C. Palmer; "*The Status of the Dairy Industry Under State and Municipal Inspection*" J. G. Winkjer, Dairy and Food Commissioner; "*Pathogenic and Non-Pathogenic Bacteria in Milk and Their Relation to Public Health,*" H. W. Hill, Secretary, Public Health Association; SYMPOSIUM ON HOG CHOLERA: (a) *Hog Cholera Control,* H. O. Tellier, Farmington, Rep. of the Swine Breeders' Association; (b) *Practical Field Work,* D. F. E. Palmer; (c) *Proper Method of Serum Production,* Dr. Geo. H. Roberts, Indianapolis; (d) *Discussion Opened,* Dr. John F. E. Dinwoodie.

Friday, January 15, 1915, 9 a. m., clinic, Dr. C. E. Cotton's Hospital, at 615 4th avenue S., Minneapolis, in charge of committee, Dr. W. C. Prouse, chairman.

F. E. WALKER SHOULD GO.—Mr. Frederick E. Walker, commissioner of animal industry, confirms, in a formal reply to our recent editorial, his previous admission that he was notified on October 21, by one of his own agents, that a case of foot-and-mouth disease had occurred in the stockyards in Buffalo. He goes on to say: "From that time on every animal coming into Massachusetts was held in quarantine and was carefully inspected by federal and state authorities." This shows what Mr. Walker's advisers have now told him should have been done, but it is not what was done. No quarantine order of any kind against foot-and-mouth disease was issued in Massachusetts until November 7. Then, two days after his department had been notified that the disease had developed in this commonwealth itself, and one day after the federal government had established a quarantine against us. Mr. Walker issued an order forbidding the movement of all meat cattle, sheep, swine, etc., within the state, and another preventing the movement of hay. On November 11 a similar order was issued applying to poultry and pigeons as carriers of infection.

Mr. Walker's interests are rather with the dead than with the living, for between October 21 and November 7, when he says he had quarantined the state and had inspected every cow entering it, he had directed attention toward asking the federal and local inspectors to examine the cows brought in to our abattoirs for slaughter, while allowing carload after carload of cows to come in for sale among our farmers without let or hindrance. He is even now permitting cows to be sold here by auction so long as he is himself present to issue permits for their sale. This is a Canute-like action, which would be laughable were it not likely to entail such needless loss. The cattle commissioner should be a thoroughly educated veterinary surgeon. Mr. Walker is not a veterinarian at all. His blundering inefficiency has cost the farmers of the state heavily. He should resign his office, or be asked to do so. It is "no joke" to have the management of great affairs in the hands of the untrained and the incompetent. In nothing do the people more clearly "pay the price."—(*Boston Herald.*)

EACH NUMBER BETTER THAN THE LAST: Dr. Marnie Wesner of Illinois says of the REVIEW: "I look forward to each number, as I do to my meals—I feel as though I could not get along without it, as each number gets better."

IMPORTANT MEAT INSPECTION AND QUARANTINE DECISIONS: The Supreme Court of the United States has recently handed down decisions of great importance in the enforcement of the Meat Inspection and Live-Stock Quarantine Laws. The meat inspection law provides for the inspection of meat and meat food products before they enter interstate commerce. Among the provisions of this Act is one which prohibits anyone from unlawfully destroying, or altering marks, or other identification devices which are required to be placed upon the meat or the containers.

Some parties in Kansas City, Kansas, broke a Government seal on a car of meat and the lower court held that the Meat Inspection Act related alone to those engaged in the business of preparing meats for transportation and the carrying of such meats in interstate transportation. The Supreme Court reversed this decision and held, in substance, that the provision regarding identification devices applies to every person, firm, or corporation, or officer, agent, or employee thereof, no matter whether engaged in the interstate transportation of the meats or not. This decision will materially aid the Government in the strict enforcement of the law.

The Live Stock Quarantine Law prohibits the interstate movement of live stock from any territory quarantined by the Secretary of Agriculture, except under certain conditions prescribed by him. The District Court at Kansas City, Missouri, in the case of United States *vs.* Nixon *et al.*, construed the Act not to apply to receivers of railroad companies, for the reason that they were not mentioned in the statute. The Supreme Court reversed this decision, and held that the amendment to the original Act was intended to make the remedy as broad as the evil which was sought to be cured, and that the law, as amended, applied to any common carrier engaged in the interstate transportation of live stock. This decision is regarded of great importance in the enforcement of the law enacted for the protection of the live-stock interests of the country.—(Office of Information, U. S. Dept. of Agriculture, Washington, D. C.)

DR. W. H. ROBINSON, of Maine, in renewing his subscription, says: "Has my subscription run out? You will find inclosed check for 1915. Please notify me in the near future as I do not like to lose any copies, as I am filing them away and want to keep them all intact. I look for it the same as I do my meals." (The doctor was one of those anxious about his December number.)

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alabama Veterinary Med. Ass'n	Mar. 5-6-7, 1914	Auburn	C. A. Cary, Auburn.
Alumni Ass'n, N. Y.-A. V. C.	June 10, 1915	141 W. 54th St.	P. K. Nichols, Port Richmond, N.Y.
American V. M. Ass'n.	Pending	New Orleans, La	Nelsen S. Mayo, 4753 Ravenswood Ave., Chicago, Ill.
Arkansas Veterinary Ass'n	January 5-6, 1915	Little Rock	R. M. Gow, Fayetteville.
Ass'n Médécale Veterinare Française. "Laval"	1st and 3d Thur. of each month	Lec. Room, Laval Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago	2d Fri. each month.	Chicago	H. A. Smith, Chicago, Ill.
B. A. I. Vet. In. A., So. Omaha	3d Mon. each month.	S. Omaha, Neb.	E. J. Jackson, So. Omaha.
Buchanan Co. Vet. Ass'n.	Monthly	St. Joseph	F. W. Caldwell, St. Joseph, Mo.
California State V. M. Ass'n.	December 10, 1913.	San Francisco	John F. McKenna, Fresno.
Central Canada V. Ass'n.	Feb. and July	Ottawa	A. E. James, Ottawa.
Central N. Y. Vet. Med. Ass'n.	June and Nov.	Syracuse	W. B. Switzer, Oswego.
Chicago Veterinary Society	2d Tues. each month.	Chicago	D. M. Campbell, Chicago.
Colorado State V. M. Ass'n.	January, 1914	Denver	I. E. Newsom, Ft. Collins.
Connecticut V. M. Ass'n.	1st Tues., Feb., 1915.	Hartford	B. K. Dow, Willimantic.
Delaware State Vet. Society	Jan., Apl., July, Oct.	Wilmington	A. S. Houchin, Newark, Del.
Essex Co. (N. J.) V. M. A.	3d Mon. each month.	Newark, N. J.	J. F. Carey, East Orange, N. J.
Genesee Valley V. M. Ass'n.	2d week, July, 1913.	Rochester	J. H. Taylor, Henrietta.
Georgia State V. M. A.	Dec. 22-23, 1913	Atlanta	P. F. Bahnsen, Americus.
Hamilton Co. (Ohio) V. A.			Louis P. Cook, Cincinnati.
Illmo Vet. Med. Ass'n.	Nov. 20, 1914	E. St. Louis	L. B. Michael, Collinsville, Ill.
Illinois State V. M. Ass'n.	Dec. 3-4-5, 1914	Chicago	L. A. Merillat, Chicago.
Indiana Veterinary Association	Jan. 14, 1914	Indianapolis	A. F. Nelson, Indianapolis.
Iowa Veterinary Ass'n.	Dec. 9-10-11, 1914.	Cedar Rapids	C. H. Stange, Ames.
Kansas State V. M. Ass'n.	Jan. 5-6, 1915	Topeka	J. H. Burt, Manhattan.
Kentucky V. M. Ass'n.	Oct. & Feb. each year.	Lexington	Robert Graham, Lexington.
Keystone V. M. Ass'n.	2d Tues. each month.	Philadelphia	Cheston M. Hoskins.
Lake Erie V. M. Association	Pending	Pending	Phil. H. Fulstow, Norwalk, Ohio.
Louisiana State V. M. Ass'n.	Sept., 1914	Lake Charles	Hamlet Moore, New Orleans, La.
Maine Vet. Med. Ass'n.	Jan. 27, 1915	Augusta	H. B. Wescott, Portland.
Maryland State Vet. Society		Baltimore	H. H. Counselman. Sec'y.
Massachusetts Vet. Ass'n.	4th Wed. each month.	Young's, Boston.	W. T. Pugh, Southbridge.
Michigan State V. M. Ass'n.	Feb. 3, 4, 1914	Lansing	W. A. Ewalt, Mt. Clemens.
Minnesota State V. M. Ass'n.	Jan. 13-14-15, 1915.	St. Paul	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n.	1914	Vicksburg	J. D. Townsend, Louisville.
Missouri Valley V. Ass'n.	Feb. 2-3-4, 1915	Kansas City, Mo.	Hal. C. Simpson, Denison. Ia.
Mississippi Valley V. M. Ass'n.	Semi-Annually	Galesburg, Ill.	G. E. McIntyre, Alexis, Ill.
Missouri Vet. Med. Ass'n.	July, 1915	St. Louis	Chas. D. Tolse, Kansas City.
Montana State V. M. A.	Sept. 24, 25, 1913.	Helena	A. D. Knowles, Livingston.
Nat'l Ass'n B. A. I. Employees	2d Mon., Aug., 1915.	New York, N. Y.	S. J. Walkley, 185 N. W. Ave., Milwaukee, Wis.
Nebraska V. M. Ass'n.	1st Mo. & Tu., Dec. '13	Lincoln, Neb.	Carl J. Norden, Nebraska City.
New York S. V. M. Soc'y.	1915	Ithaca	H. J. Milks, Ithaca, N. Y.
North Carolina V. M. Ass'n.	June 23, 1914	Wilson	J. P. Spoon, Burlington.
North Dakota V. M. Ass'n.	Week of July 20, 1914	Fargo	A. F. Schalk, Agricultural College.
North-Western Ohio V. M. A.	Nov. 1913.	Delphos	E. V. Hover, Delphos.
Ohio State V. M. Ass'n.	Jan. 6-7, 1915	Columbus	Reuben Hilty, Toledo.
Ohio Soc. of Comparative Med.	Annually	Upper Sandusky.	F. F. Sheets, Van Wert, Ohio.
Ohio Valley Vet. Med. Ass'n.			J. C. Howard, Sullivan.
Oklahoma V. M. Ass'n.	Fall, 1913.	Oklahoma City.	C. E. Steel, Oklahoma City.
Ontario Vet. Ass'n.	1st Week in Feb. 1914	Toronto	L. A. Willson, Toronto.
Pennsylvania State V. M. A.	March, 1915	Harrisburg	John Reichel, Glenolden.
Philippine V. M. A.	Call of President	Manila	David C. Kretzer, Manila.
Portland Vet. Med. Ass'n.	4th Tues. each month.	Portland, Ore.	Sam. B. Foster, Portland, Ore.
Province of Quebec V. M. A.		Mon. and Que.	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.	Jan. and June	Providence	J. S. Pollard, Providence.
South Carolina Ass'n of Veter'ns.	Pending	Pending	B. K. McInnes, Charleston.
South Illinois V. M. and Surg. Ass'n.	Aug. 4-5-6. 1914	Salem	F. Hockman, Iola.
St. Louis Soc. of Vet. Inspectors	1st Wed. fol. the 2d Sun. each month.	St. Louis	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.	Dec. 16, 1914	Reading	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.		Philadelphia	B. T. Woodward, Wash'n, D. C.
South Dakota V. M. A.	Pending	Madison	S. W. Allen. Watertown.
Southern Aux. of Cal. S. V. M. Ass'n.	Jan., Apl., July, Oct.	Los Angeles	J. A. Dell, Los Angeles.
South St. Joseph Ass'n of Vet. Insp.	4th Tues. each month	407 Illinois Ave.	H. R. Collins, South St. Joseph.
Tennessee Vet. Med. Ass'n.	November, 1914	Nashville	O. L. McMahon, Columbia.
Texas V. M. Ass'n.	Nov., 1913	College Station.	Allen J. Foster, Marshall.
Twin City V. M. Ass'n.	2d Thu. each month.	St. P.-Minneap.	M. H. Reynolds, St. Paul, Minn.
Utah Vet. Med. Ass'n.	Spring of 1914	Salt Lake City.	E. J. Coburn, Brigham City.
Vermont Vet. Med. Ass'n.			G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta			C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Vet. Ass'n Dist. of Columbia	3d Wed. each month	514 9th St., N.W	M. Page Smith, Washington, D. C.
Vet. Med. Ass'n, Geo. Wash. Univ.	1st Sat. each month.	Wash'ton, D. C.	J. M. Cashell, 2115 14th Street.
Vet. Ass'n of Manitoba.	Feb. & July each yr.	Winnipeg	Wm. Hilton, Winnipeg.
Vet. Med. Ass'n of N. J.	Jan. 14, 1915	Trenton	E. L. Loblein, New Brunswick.
V. M. Ass'n, New York City	1st Wed. each month.	141 W. 54th St.	R. S. MacKellar, N. Y. City.
Veterinary Practitioners' Club.	Monthly	Jersey City	T. F. O'Dea, Union Hill, N. J.
Virginia State V. M. Ass'n.	July 9-10, 1914	Staunton	Geo. C. Faville, North Emporia.
Washington State Col. V. M. A.	1st & 3d Fri. Eve.	Pullman	R. J. Donohue, Pullman.
Washington State V. M. A.	June, 1915	Yakima	Carl Cozier, Bellingham.
Western N. Y. V. M. A.	June 24, 1914	Buffalo	W.E.Fritz, 358 Jefferson St., Buffalo
Western Penn. V. M. Ass'n.	3d Thu. each month.	Pittsburgh	Benjamin Gunner, Sewickley.
Wisconsin Soc. Vet. Grad.	Feb. 10, 11, 1914	Milwaukee	W. W. Arzberger, Watertown.
York Co. (Pa.) V. M. A.	June, Sept., Dec., Mar	York	E. S. Bausticker, York, Pa.

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